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VETERINARY COUNTER PRACTICE

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VETERINARY
COUNTER PRACTICE

A TREATISE ON THE DISEASES OF ANIMALS AND THE MOST SUITABLE REMEDIES FOR THEM

WRITTEN EXPRESSLY FOR CHEMISTS AND DRUGGISTS

BY QUALIFIED AND EXPERIENCED MEMBERS
OF
THE ROYAL COLLEGE OF VETERINARY SURGEONS

SEVENTH EDITION

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PREFACE

THIS volume was the fourth of the series of chemists' books published by *The Chemist and Druggist.* The first edition was a book of 268 pages, and it was then explained that it was prepared and published because it was 'considered that Chemists and Druggists do not obtain that share of the veterinary practice of the country to which their knowledge of drugs and their action might fairly entitle them. While they could not, and need not, desire to compete with the qualified Veterinary Surgeon, they might, to a much greater extent than they do, supply the passing requirements of the farmer, the stockholder, and the pet owner. The suggestions will not serve as a substitute for the clinical experience absolutely necessary to the equipment of a competent veterinary practitioner, but in hundreds of cases they will enable the chemist to understand cases detailed to him at his counter, and to supply the most suitable remedy.' Since these words were written it has been successfully contended in the English High Court of Justice that the use by registered chemists of the title 'Veterinary Chemist' is not an infringement of the Veterinary Surgeons Act (see page 414). The decision goes no farther than the use of the title, but it suffices for the counter practice to which this treatise is solely directed.

PREFACE

Each succeeding edition of the book has been revised and enlarged, the Editor having had in every revision the assistance of experienced veterinarians who are Members of the Royal College of Veterinary Surgeons. This, the seventh edition, contains a considerable number of additions and emendations, made for the purpose of bringing the treatise into line with recent advances in veterinary knowledge and practice, as well as to increase its usefulness to veterinary chemists—*e.g.*, the Posological Table is enlarged by inclusion of the more recent remedies, and references are made to the increasing use of serums and vaccines in the treatment of infectious diseases of animals.

42 Cannon Street, London, E.C.
September 1915.

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VETERINARY COUNTER PRACTICE

MEDICAL AND SURGICAL TREATMENT OF DOMESTIC ANIMALS

Horses.—Medicines are usually administered to horses in the form of balls or draughts, sometimes as powders mixed with the food. When so mixed the substances should have no very disagreeable taste, nor any marked odour, save a few vegetable aromatics, such as coriander, caraway, and aniseed, which are frequent ingredients of tonic and stomachic preparations. Some authorities recommend that condition powder should not be given with the food, as they find that once the horses taste it they will not take feed without it, especially if the condition powder contains aniseed. Bitter agents are not much objected to, and many horses will eat Epsom salts. Powders should be given with moist food, not with dry, as in the latter case the ingredients sink to the bottom of the feeding box.

Draughts are a very common form, and, for some purposes, indispensable. In cases accompanied by sore throat they should be given cautiously, as the animal, from having the head elevated, is apt to cough, and so allow a portion of the draught to pass into the windpipe. When this happens with a ball, the animal is choked, death quickly ensuing.

Medicines are frequently administered in drinking water—*e.g.*, potass. chloras, magnes. sulph., and potass. nitras.

In sore throats it is advisable to substitute electuaries, made either with honey or treacle, and merely smeared on the tongue, or put into a piece of muslin and placed as a bit in the mouth.

Horses can retain fluids in the mouth for a long time without swallowing, and in this way sometimes reject medicine.

Balls are by far the handiest form of preparation, but only a small proportion of stablemen are able to administer them—a fact overlooked, apparently, by those responsible for County Council lectures on veterinary topics, else instruction of a practical nature would be afforded in place of learned disquisitions on the origin of species and descent of the horse. When administered in the form of a ball there is a greater certainty of the animal getting the whole dose, as medicines mixed with the food may be left untouched, and, commonly, a good deal of a draught is wasted in the giving. Balls should be cylinder-shaped, not more than 1 inch in diameter, about $2\frac{1}{2}$ inches in length, and about 1 oz. in weight. Nowadays it is customary to coat them with gelatin, the old-fashioned paper coating being obsolete. They should never be used in cases of sore throat, as they irritate the part, and may be coughed back into the nose, from which cavity their removal is extremely difficult. It is thought by some people that medicines act quicker in the form of a draught than as balls. Numerous experiments upon horses show that nearly all balls are thoroughly dissolved in the stomach in less than half an hour. We may, then, when practicable, give the preference to balls as the best ordinary form of preparation for horses. Drenches, however, are to be given when the medicine is liquid, when the dose is large, and when very speedy action is required. It is desirable that the ends of the paper wrapping should be broken off, especially when paraffined paper has been used, this substance being extremely insoluble. Balls so wrapped have been discovered whole in the droppings.

It is generally believed that horses cannot vomit, because very few people have seen them do so. In cases of ruptured stomach and diaphragm, emesis may be almost regarded as diagnostic. In stricture of the œsophagus also there is return of the food, which more often than not comes through the nostrils (*viâ* the posterior nares). The green colouring of nasal discharges, when horses at grass are suffering from catarrh, is due to some masticated food being coughed or otherwise thrown into the nasal chamber, and must not be mistaken for glanders or other specific disease marked by coloration of the mucus.

Emetics are not intentionally given to horses, but nauseants are prescribed as febrifuges, and their action is demonstrated by the patient 'turning up his nose' (elevating the upper lip), at the same time raising the head, with a well-marked expression of disgust. Though it is well-nigh impossible to excite vomiting in the horse, it is very easy to induce nausea, the smell of a dirty bucket or stale mash in the manger being generally enough to cause it.

Medicines are also administered, though less commonly than in the forms already mentioned, by the rectum, as enemas or clysters; through the trachea, and under the skin by the hypodermic syringe. Medicines administered hypodermically are coming more and more into favour, the small quantity required, its compactness and quick action being in favour of them. As to drenching, the aphorisms are: (1) Use a drenching horn (not a bottle); (2) do not raise the head too high; (3) should the animal cough, lower the head; (4) remember quietness is a road to success, and patience is a virtue; (5) if the horse refuses to swallow, pass the hand into the mouth and withdraw the tongue; (6) do not rub or strike the outside of the throat.

Cattle differ from horses principally in having four stomachs and possessing the power to ruminate. The best form of administering medicine to them is the draught, as they are easily held, and have not, like the horse, the power of retaining fluids in the mouth for any length of time without swallowing. Balls are not very much used for cattle, as it has been thought that they remain undigested in the first stomach (rumen); but later experience does not confirm this, and many modern practitioners administer balls, especially of the tonic and cordial class, where a purgative action is not sought.

Probably some portion of all fluids imbibed by cattle passes into the rumen also; for this reason, then, it is best always to give a considerable quantity of fluid with a draught. Twelve ounces of sulphate of magnesia in 4 quarts of water is as active as 16 oz. in half the fluid.

Sheep may have medicines given to them in the same form as cattle, the dose, however, being only about one-fourth. The dosing of sheep has commonly to be undertaken in a wholesale manner, the drenching of each individual in a flock twice or more in a day being out of the question. This difficulty seriously restricts us in the choice of *materia medica*, and we have to look for those substances which will be consumed with the food, or made palatable by the addition of salt, aniseed, and other condiments for which sheep have a special liking. The number of animals to be treated must first be ascertained, and the quantity estimated on the assumption that each member of the flock will take its share with the food.

Pigs should have their medicines mixed with the food. When this fails—as, for instance, in cases of total loss of appetite—the draught is used. Great care must be taken not to pour fluids into these animals while they are squealing, as they are very easily suffocated.

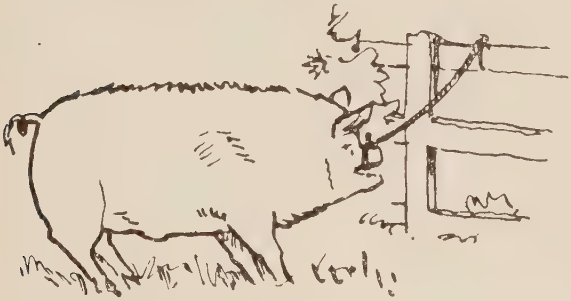

FIG.

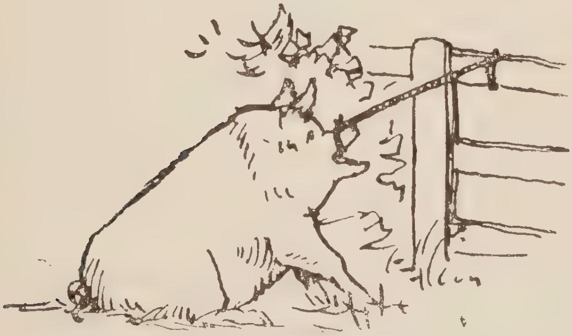

FIG. 2.

DRENCHING A PIG.

The proper way to secure a pig, in order to drench him, is to introduce a running noose into the mouth, with the loop uppermost, so that he will draw it tight over the face when attempting to escape. The tushes prevent the cord from coming away if it has been properly tied. With this he can be pulled to a post, upon which a half hitch is made (see figs. 1 and 2). With such a *point d'appui* the necessity of a cord round his neck is removed, and greater freedom permitted when presently the draught gets into his gullet. A man can bestride him when so secured and hold him by the ears, while another pours the medicine carefully into his cheek, avoiding his teeth, which are very apt to crush a bottle and injure the patient. The time-honoured implement in pig drenching is a stout old boot with the toe cut off; it is a safe funnel which the angry patient 'champs' while the medicine is running through it. A piece of hose-pipe is as good an appliance as can be got, as one can stand at a reasonable distance.

Dogs take medicines easily in the form of pills or draughts. When the appetite is good, substances may be mixed with the food, or, if nearly tasteless, sprinkled on a piece of meat. Pills, too, may often be kept down by giving the dog a small piece of meat after them.

Powders are easily administered by simply throwing upon the tongue, and, unless very bulky, will be involuntarily swallowed with the saliva. Most canine practitioners consider the powder the easiest means of giving medicines to dogs. Pills should be made large, even when intended for small dogs, as they are much easier to hold while pushing them over the back of the tongue. There is not the least danger of the bolus going the wrong way, and it should be remembered that the gullet is so large in the dog that he can swallow larger bodies than can be passed through the small intestines subsequently, if they happen to be insoluble. A fashion has recently set in among canine surgeons of sending out very minute pills. Dog-owners with more guile than courage find it possible to deceive the most wary patients with pills containing a quarter-grain of jalapin, after 'ground-baiting' with a chocolate cream or raw meat innocent of any medicament. Medicines do not act with the same power if given on a full stomach; therefore, according to the circumstances, either increase the dose a little when it is to be given after food, or order it not to be given immediately after a meal.

Temperature.—The clinical thermometer, in conjunction with other symptoms, affords a most valuable diagnostic aid. When a practitioner had to judge a patient's temperature by putting his hand into the mouth, he had need to have a well-trained hand indeed if after a long cold drive or upon a hot summer day he could detect an alteration of two or three degrees—not much to feel with the hand, but making all the difference to the patient's prospects. In diagnosing from the readings of the thermometer consideration must be given to the state of the animal and other circumstances which influence it, such as pregnancy, rumination, period of the day, and whether before or after food. In an early edition of this work it was stated that the temperature is not increased by a gallop. This was deduced from experiments on horses galloped for wind-testing purposes in a short straw ride at the Royal Veterinary College, but Professor Hobday, Mr. Willis, and other eminent veterinary surgeons have taken the temperature of large studs of omnibus-horses immediately after severe exertion, and found a considerable proportion with an elevation of several degrees, without any departure from health. Such high temperatures would prove deceptive were it not added that they quickly fall as the horse literally cools down.

In order to ascertain the temperature, the thermometer is usually inserted into the rectum of the male or vagina of the female animal, as the mouth is obviously the least safe place for a glass instrument, and motives of delicacy do not preclude the veterinarian from using the thermometer in the way described even when some unusually obtuse lady cannot be induced to lose sight of her lap-dog if such happen to be the patient under examination. The temperature of horses on board ship, where their rear is inaccessible, is taken by introducing the instrument with two fingers into the cheek. A good many thermometers are broken in this way, but most people will prefer a broken 'clinical' to a broken leg, and adopt the marine fashion with kickers ashore.

In ruminants the temperature varies in health, seldom falling below 100° F., and more often ranging up to 101°. Milking cows average about 102° F., and may be often observed to be 103° without any apparent departure from health. These figures are approximately correct, and are taken from a daily reading of thirty-five cows and fifty steers, heifers, and calves.

An increase of one or two degrees may or may not indicate a serious disease: 104° or 105° F. with a cough should put the veterinarian on his guard, and no harm can be done by isolating such a case until it has been decided whether the elevation of temperature is merely due to gastric derangement or indicative of specific disease, such as pleuro-pneumonia or anthrax.

The Pulse of a horse is usually taken at the angle of the lower jaw, as there the submaxillary artery passes close to the bone and is easily compressed with the finger, giving one a sense of its volume and character as well as number. In a heavy horse the pulse should beat about thirty times per minute, and in a blood horse forty or even more. Pregnant mares have a quicker pulse, and of course exercise alters it according to the pace and conditions. In the above statement we have instanced a healthy horse standing still in the stable and free from either excitement or fear. Some horses are so nervous that the pulse is accelerated the moment a stranger walks up to them, and the examiner will be deceived unless he wait a minute or two till the creature's alarm has abated. Character is more than mere number, and nothing but experience can teach the importance to be attached to a full, a round, a hard, a soft, a wiry, or an intermittent pulse. It may be stated broadly that a quick pulse indicates fever, and an abnormally slow one suspended power, as in staggers (sleepy), or is indicative of debility if it is weak as well as slow. Pulse and temperature and respiration need be considered together to be any accurate guide.

The pulse of the ox is felt at the radial artery under the forearm, at the back of the fetlock, or at the caudal arteries under the tail, at that portion where it is hairless. The last-named is the most convenient, unless the animal happens to be vicious.

In dogs and cats it can be readily felt inside the thigh (the femoral artery), or taken at the heart, but they are such excitable creatures that much reliance cannot be placed on the pulse.

The following table indicates the normal pulse beats, temperatures, and respirations of the various animals :—

Animal	Pulse	Temperature	Respiration
Horse . . .	35–45	100·2° F.	8–12
Foal . . .	65 (more or less)	—	—
Ass . . .	45–50	—	—
Pig . . .	55–80	102° F.	20–30
Dog . . .	70–95	101·5° F.	15–25
Ox . . .	45–60	102° F.	12–16
Calf . . .	65 (more or less)	—	—
Sheep . . .	70–80	103° F.	20–30
Lamb . . .	90 (more or less)	—	—
Cat . . .	110–130	—	—

Setons and Rowels are old-fashioned remedies for producing counter-irritation, and are still largely used in some districts in the belief that quarter-ill or blackleg is thereby prevented, and this belief is growing again.

A seton is a piece of tape, or string, or horsehair woven into a cord and passed through the skin by means of a large seton-needle, purposely designed to carry stout material, and having a very sharp point, so that one effort will make it go through the skin and avoid unnecessary pain. The seton is then dressed with some irritating material, such as turpentine or liniment of ammonia, and knotted or tied to prevent its coming out. Large knots are preferable to a loop, as animals sometimes hang up in a tied seton. The dewlap is the part chosen for setons as a preventive for anthrax, but the idea is practically exploded and the practice is falling into disuse. Setons are often beneficial in cases of deep-seated lameness, and in the removal and absorption of tumours.

Rowels are circular discs of leather introduced under the skin and productive of suppuration, as is the case with setons ; they should be moved daily to keep up the issue. In some old pharmacies are to be found 'issue peas': these implements of torture used to be inserted in the necks of epileptic persons. The idea is the same whether for man or animals—namely, to set up an artificial irritation near the seat of disease or to give an issue to the ill humours with which men and animals were commonly supposed to be possessed in the days when spring and autumn bleedings and purgings were consented to by rational beings and endured by animals who had no choice.

Bleeding is an operation occasionally recommended in these pages, and although it is a practice which has fallen, to a great extent, into desuetude, there are urgent occasions for it ; the too free use of the fleam and the blood-stick last century has produced a revulsion, and it may be that the benefit of bleeding is sometimes forgotten now among a generation who perhaps never used a fleam.

Bleeding may be general or local. When it is desired to abstract a considerable quantity of blood, as in congestion of the lungs, the jugular veins are selected, as these are large and near the surface, thus necessitating only a small amount of local injury. In brain diseases, bleeding from the 'eye' or angular vein is resorted to. Expert veterinary surgeons arrest the downward course of the blood in the vein by pressing the thumb or two fingers in the channel of the neck until the vein above the seat of pressure fills up and feels hard and distended with blood, and then with a lancet in the other hand quickly puncture the vessel, which immediately pours out a continuous stream of dark-coloured (venous) blood so long as the pressure below is maintained. It cannot be expected of those who are not frequently called upon to bleed that they should do it in this manner, and a safer plan for them is to draw a cord tight round the neck, rather more than halfway down, and loop it so that it will press the channel of the neck and not come undone. A wine-cork under the cord is found to facilitate matters very often. A little time should be allowed for the vein to fill up, and no attempt should be made until it looks like a rope under the skin ; it may then be opened by a lancet or struck with a fleam and blood-stick. The lancet has now almost entirely superseded the fleam ; the latter was thought by some practitioners to be safer because it could only be made to go in to a certain depth ; but, as a matter of fact, there is very much more danger from the blow with the stick than there is from going too deep with a lancet. Getting into the vein at all is the chief difficulty besetting amateurs, and the danger of wounding the carotid artery is more imaginary than real. So long as the bleeding is to continue, the pressure below the orifice must be maintained. A measure of some sort should be used to catch the blood, as a very little blood on a floor makes a great show, and one may be easily deceived as to the quantity abstracted.

When sufficient blood has been taken, the pressure of cord or fingers is removed, and very little difficulty remains in arresting it. The common and not very objectionable method is to take the lips of the wound between the forefinger and thumb of the left hand and run a pin through both lips ; from above downwards affords the greatest advantage to the operator, and, the skins of some horses and cattle being very thick, a good deal of finger force is necessary. The pin is then secured by winding a piece of tow round the ends like a figure of eight ; or if tow, thread, or the ravelled end of a sack or rope cannot be found, then a few hairs from the horse's tail or mane will answer the purpose. Tow we consider the most suitable, and advise a little ol. carbol. (1 in 20 or 30) to be applied at the same time. The pin should be allowed to remain for twenty-four hours, and the horse—if it be a horse—tied up so that he cannot rub it. Bullocks do not, as a rule, try to interfere with the pin. To remove it, the head end has only to be pulled steadily, leaving the tow adhering by a clot generally, which is best left alone.

Inflammation of the vein (phlebitis) seldom follows, and when it does the best plan is to blister down its course, as, failing to do its work immediately, it is generally lost and becomes a fibrous-looking cord. Theoretically this seems a great objection to an animal, and writers have averred that horses so affected are liable to brain troubles if turned out to grass, etc. Practically there is not much to fear from a lost vein, or even a lost artery, as collateral circulation is quickly established. Phlebitis is generally due to a dirty instrument and blundering in the operation; a clot forms, which is Nature's cure.

Bleeding from the jugular vein is usually practised on horses and cattle only, but there are kennelmen who bleed hounds in this manner, and with a boldness calculated to make an anatomist shudder.

Sheep are sometimes bled, but they are very bad subjects for blood-letting, and the custom of slitting an ear, the palate, or the eye-vein is perhaps better than attempting any larger vessels, which might cause death. Many shepherds, however, regularly bleed by incising the jugular vein; not much danger is involved once the operator has become moderately expert.

Pigs are awkward subjects to handle, and often have part of the tail cut off for bleeding, while the ear is also frequently selected.

Dogs may be bled from the jugulars, as previously mentioned, but it is very rarely necessary to bleed them at all. The ear should on no account be cut, as it is often most troublesome to heal, and the animal scratches it with his leg, and continually shakes his head.

Local bleeding is adopted to relieve particular parts, as at the toe to relieve laminitis in the horse; an operation now but rarely performed, as it is found that aloes and its preparations given internally do much more to reduce the congestion of the foot than blood-letting. More benefit is derived by poulticing and wet swabs in the case of inflamed feet: the expansion giving more room for the congested tissues to swell than the temporary extraction of blood, which is followed by increased inflammatory action at the seat of puncture. Bleeding from the saphena vein is occasionally adopted in cases of swollen hind legs;

the vein crosses the hock from behind forwards, and the part selected to bleed from is on the inside of the lower portion of the thigh, where the vein passes along the surface of the bone (tibia); the method is the same as for bleeding from the jugulars. The eye-vein, which stands out prominently on the side of the face, is occasionally opened with a view to relieve inflammation of the eye.

The palate of the horse, behind the incisor teeth, is the part selected for bleeding by stablemen, and in the case of a horse attacked with megrims on the road it is a good 'tip'; with no better instrument than a pocket-knife a cut may be made, and a few ounces of blood let out will more quickly restore the animal than anything else. Care should be taken, however, never to go farther back than the second bar, or the palatine artery will be cut. If this occurs, arrest the bleeding by filling the mouth with meal or flour, or an astringent pad may be applied and kept secure by a bandage.

Anæsthetics for Animals.—There is an increasing disposition on the part of owners of animals to have them anæsthetised as a preliminary to all serious operations.

For horses and cattle pure chloroform is to be preferred, and is practically free from danger. Dogs and cats are bad subjects for total anæsthesia, and the A.C.E. mixture (alcohol 1 vol., chloroform 2 vols., and ether 3 vols.), so much used in human practice, is by some chosen in preference to ether alone, which for dogs is safest, but in the case of cats too exciting. For the latter a mixture of 3 parts of chloroform and 1 of ether has been found to answer best.

Horses are commonly cast with hobbles and ropes (see fig. 3) before administering chloroform, as they fall quite as awkwardly and with as much risk to the spine if compelled to inhale chloroform from a muzzle while standing. There are a variety of patent muzzles for the purpose, but nothing more is needed than a sponge (saturated first, and then the superfluous chloroform squeezed out) introduced into one nostril, previously anointed with vaseline or lard. By depressing the wing of the opposite nostril during inspiration, the animal is compelled to inspire through the sponge, while the breath can be allowed to expire through the unoccupied nostril by releasing the fingers which held it during inspiration. The degree of anæsthesia produced is measured by the insensibility of the eye to external influences, and by the shallowness of the respiration as shown by the flanks. The pulse may be disregarded as affording no indication of the animal's rallying power, but the anæsthetic should be temporarily suspended if the movements of the flank appear to be at a standstill. As a matter of fact, it is found to be very difficult indeed to kill a horse with chloroform when some merciful client wishes an old pet to be so disposed of.

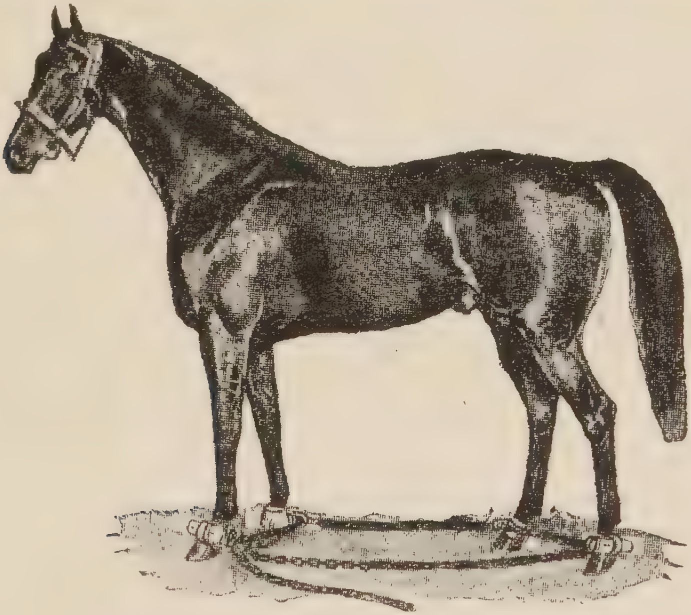

FIG. 3.—HORSE FITTED WITH HOBBLES (MADE BY HUISH & CO., 12 RED LION SQUARE, LONDON, W.C.) READY TO BE CAST FOR ANÆSTHETISING.

Notwithstanding this, chloroform should never be given as an anæsthetic unless by a qualified man, who understands the pulse, respirations, etc. In case of overdose inhalations of liq. ammon. fort., douches of cold water, artificial respiration, and forced motion should be resorted to.

Local Anæsthetics.—No surgical operation of any importance is performed without a local anæsthetic, such as eucaine in excision of tumours, and cocaine for eye operations, while in the amputation of legs and tails of cats and dogs quinine and urea hydrochloride are an efficient local anæsthetic, the action being maintained for days, so that the animal does not rub the wound. Adrenaline may be combined with the anæsthetic.

Killing Dogs and Cats.—There are few chemists who are not called upon at some time or other to make an end of dogs and cats which have grown old and morose, dirty or dangerous, or in other ways offended against the unwritten code of laws which governs the conduct of domestic pets. If we recognise as part of our legitimate business the putting-out of existence of animals of the class above referred to, the aim should be to do it in a manner at once merciful, rapid, and safe to the operator.

The pet-owning public has an idea that animals can be *instantaneously* destroyed by some subtle poison that has only to 'touch the nose' and make 'the life-weary taker fall down dead,' as though he had inhaled anhydrous hydrocyanic acid, and most clients are dissatisfied when they see the tetanic spasms induced by Scheele's or B.P. acid. hydrocyan. dil. The explanation probably is that 'instantaneous' is a relative term; under certain conditions a dog may expire in ten seconds after a good dose of Scheele, especially if its heart is enlarged. Strychnine should not be used to poison dogs: it is cruel, slow, and uncertain. The rule is to use it only when the animal is vicious, and too wild to be approached. As humane men we prefer the lethal chamber, but we are met again with that crystallised imagination which has given shape to an oft-repeated fallacy, and we cannot too clearly and patiently describe the necessarily slow action of chloroform in putting the animal to a sleep from which there is no awakening.

Do not, either from inexperience or too great willingness to please a customer, consent to use chloroform as a lethal agent in any other manner than in a box or chamber or strong close-fitting bag. A cone of cardboard with a sponge in it, saturated with the drug, is of course capable of destroying a dog or cat, but those who have had to perform in this way have found that animals apparently *in extremis* have displayed an astounding amount of vitality, and put forth the most frantic efforts to escape from what they evidently recognise as a fatal inhalation. The merciful chemist, using all his strength to hold a cone over a cat's head, and meantime getting scratched by its claws and lacerated by the tongue of its fair owner, is a humiliating spectacle, one experience of which should suffice for a long life.

Any box or leather bag will answer the purpose, although more time will be occupied if much atmospheric air gains access than if nearly air-tight, as so-called lethal chambers should be made. The illustration fig. 4 is of an oval tin hat-box, 14 inches long and 10 inches deep, furnished with padlock and key. Through the top a hole about 2 inches in diameter is cut, into which a stout cork covered with plaster skin is fitted. The animal is placed in the box, which is then securely padlocked, and a wad of absorbent cotton-wool saturated with chloroform (about ʒij.) is dropped through the opening in the lid, after which the bung is inserted.

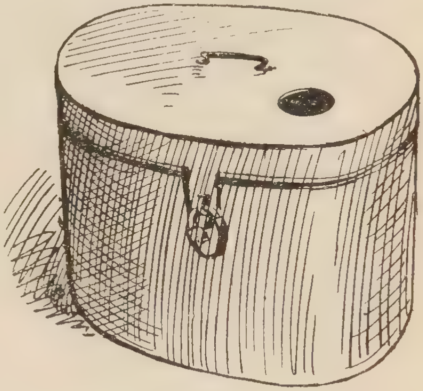

FIG. 4.

The illustration fig. 5 shows a movable partition between a small ante-chamber and a larger one into which the animal is first placed. The small lid of the lesser compartment is then lifted, and the chloroform-saturated sponge introduced. As the chloroform steals through the perforated zinc between the chambers, the occupant of the larger compartment becomes drowsy without getting suspicious, and rarely makes any struggle to escape. The window in the top of the box enables one to see when the subject is prone and insensible. It may then be given the *coup de grâce* with hydrocyanic acid, or the box may simply be kept closed until no doubt is left as to the death of the inmate.

Death by chloroform inhalation is accomplished in half the time, if a dose of chloral is first given. Syrup of chloral per rectum is the easiest way to administer it.

Further Hints.—In the case of dogs, unless *in extremis* and incapable of resistance, the veterinary chemist should stipulate that a collar and chain be attached to the animal, even though brought in a basket. For several reasons it is well that the owner or his representative should not be present

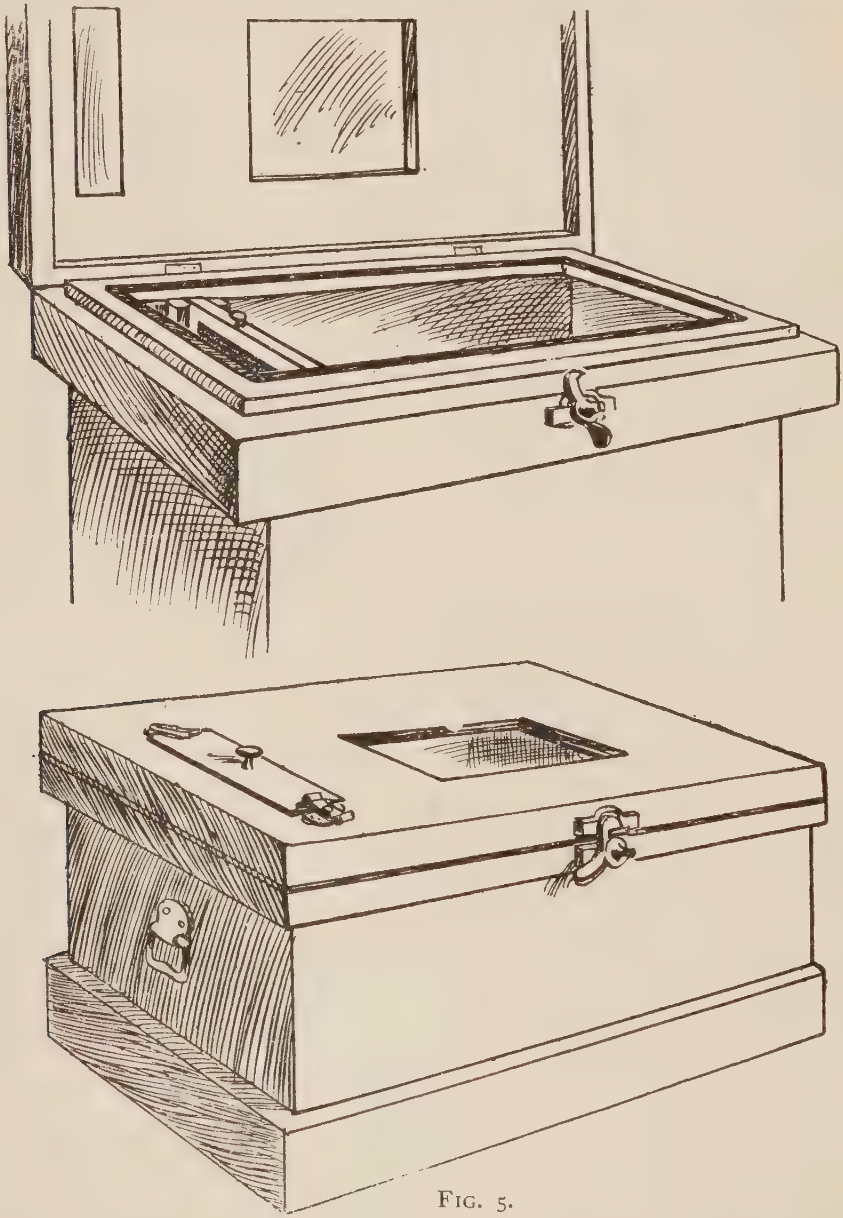

FIG. 5.

at the killing. A muzzle should be placed on the dog by the owner either before it is brought to the shop or at the time. The chemist should not neglect to see for himself that the collar is buckled tightly enough, so that the dog cannot slip it in a moment of panic, and, further to protect himself, he should put on gloves.

If a cat be brought to the place of execution in a basket, it should not be rudely dragged forth, but allowed a little time to settle down after the journey. When addressed from the outside of the basket in tones of sympathy, the animal usually allows itself to be gently lifted out by the 'scruff' of the neck. It should be remembered that pussy will go into a basket or box quite readily if put in hind-quarters first, but will almost surely resist if asked to go in head first.

What Agent should be Used?—The use of hydrocyanic acid is sanctioned by long custom, but it is not a merciful poison. Chloroform is better, and is not costly. It is most humane, and earns the chemist respect, while entitling him to a good fee. If it is decided to use hydrocyanic acid, the syringe is most easily inserted into the rectum, hardly any objection being offered. A full drachm of Scheele's acid for a cat or small dog is the quantity, but half an ounce is required for a large dog. If it is preferred to administer the poison by the mouth, there is no necessity for forcing the jaws open; the lips of either dog or cat can be parted, though the muzzle is retained in position, and it is only required to pour or squirt the fluid into the cheek. The animal must die if this is done, and the end will come quite as soon as though the jaws had been clumsily prised open and the acid poured into the mouth (and more or less spluttered out). A plan often adopted is to place the animal in a tank or chamber fitted with an inlet pipe to which a tube can be screwed; the other end of the tube is then connected to a gas jet, and the tap turned on. This proves a very effective and humane way of causing death.

VETERINARY MEDICINES

[*Numerous formulæ are given in the subsequent chapters of this book in which diseases are specially treated. In this section are introduced the medicines generally suitable for a chemist and druggist's stock.*]

Physic-mass.—'Physic,' in the language of the stable, belongs only to balls, whose chief constituent is aloes and whose mission is to purge. The collective experience of the best veterinary surgeons and horseowners goes to prove that, of all the varieties, Barbadoes aloes is the best for horses, more certain in effect, less nauseating, not disposed to gripe or leave a horse debilitated and without appetite.

It is common knowledge that veterinary surgeons sometimes charge 1*s*. 6*d*. for a physic-ball which a druggist can very well supply for half that sum, and many do sell them at the rate of 1*d*. per drachm. The ball supplied by the vet. is, however, better worth the additional money, because he adds the useful advice, 'Prepare the horse before you give it'; and if he finds the purchaser does not know the meaning of the words he proceeds to explain that to obtain the best results from aloetic (physic) balls the animal should be kept on bran mashes for twelve to twenty hours, and not allowed hay or any other dry food, but that he should have plenty of water supplied to him, with the chill taken off by adding a little hot water to it, according to the temperature of the air, etc., walking exercise being also enjoined before the medicine begins to purge, but desisted from immediately the bowels respond. In this consists the chief reason why veterinary surgeons' physic-balls often give more satisfaction than druggists'.

The practice of giving a dose of physic in the spring and autumn still obtains in many districts, and, we think, with decided advantage to the equine population of those parts, since long experience shows that fewer cases of impaction and bowel troubles occur where such an occasional purgative is given ; this particularly applies to horses habitually fed upon dry corn and chaff, hay and straw, etc., and it requires but a moment's reflection to convince the practical horseman that an animal intended by Nature to live on grass should sometimes require medicinal assistance when habitually subjected to artificial conditions of life and diet.

Physic-balls made with soft soap are apt to become very hard, and glycerin now takes its place, as in

Professor Tuson's Formula.

Aloes Barb.	℥viij.
Glycerini	℥ij.
Pulv. Zingib.	℥j.
Ol. Rapi	℥j.

Melt together over a water-bath and thoroughly incorporate by stirring.

We have found ʒij. of glycerin and ʒvj. of oil a better excipient for keeping this mass from becoming hard.

To make physic-mass on the large scale the aloes is melted in a steam-heated pan, or, if this is not available, in a water-bath. When melted, if poured on to a slab and worked up with the glycerin and ginger, a smaller proportion of glycerin than that indicated, 1 in 6 or 8, will suffice, and a mass will be produced which will keep plastic for any length of time, and which is always readily soluble.

A favourite mass with some vets. is the following :—

Aloes Barb.	℥xvj.
Pulv. Zingib.	℥ij.
Pulv. Gentian.	℥j.
S.V.R.	℥iiss.

Mass and divide into 16 balls.

The physic-mass of the Royal (Dick) Veterinary College was composed of equal weights of Barbadoes aloes and treacle with two ounces of ginger to every pound of aloes.

Finlay Dunn says: 'The addition of ginger or some such aromatic hastens catharsis and diminishes nausea and griping.' The mass should be kept in air-tight jars.

The following formula for a mass which is plastic, ductile, and soluble was published many years ago by Messrs. Elliman, Sons & Co., the makers of the well-known embrocation :—

Best Barbadoes Aloes	10 lbs.
Glycerin	1 lb.
Castor Oil	1 ,,
Powdered Unbleached Ginger	½ ,,

Dissolve the aloes in the glycerin by means of a water-bath, then add the castor oil, and lastly stir in the ginger, previously sifted through a coarse sieve.

Balls made from this mass will not retain their shape, but may be wrapped in waxed paper and put up in suitable cardboard boxes.

The dose of aloes for an ordinary carriage-horse is ʒv. or ʒvj., and for a heavy carthorse ʒvj. or ʒvij. in the southern part of Britain, but in Scotland ʒviij. is the standard dose. For every drachm of aloes it is safe to take one and a quarter drachm of mass.

Gentian increases the action of aloes, as does a previous course of iron. Aloin is sometimes given to high-bred and delicate horses in the proportion of about one quarter to one half of the dose of aloes.

A very clean and efficacious mass is made by adding carbonate of potash. Care, however, must be taken to stir the ingredients frequently when melting, as a certain amount of effervescence takes place and a quantity may be lost.

Aloes	℥xviij.
Pulv. Zingib.	℥ij.
Ol. Lini	℥iss.
Potass. Carb.	℥ij.
Aquæ	℥iiss.

Melt together in a water-bath.

Calculate the dose as required. Aloes forms two thirds of the mass.

From eighteen to twenty-four hours is the time a physic-ball takes to act, and exercise should be enjoined, but not to continue moving the animal when purging has commenced; nor should he be put to work until the 'physic is set' or the dung normal in consistence, and a feed or two of corn has been consumed.

In Australia it is seldom, we are informed, that a ʒvj. ball is wanted, far less an ʒviij. The horses most frequently treated to a ball are those coming off the grass to undergo training. It is very common to use a ʒiv. ball. Australian horses, as a rule, live a more natural life than the Home horse, and in consequence are more easily affected by purgatives. The following ball has a Colonial reputation:—

Barbadoes Aloes	ʒiv.
Powdered Soap	ʒj.
Oil of Caraway	♏x.

Enclosed in gelatin capsule.

The addition of the oil, besides counteracting the aloes-gripe, gives the ball an agreeable and distinguishing odour. An Australian chemist says that a 5-drachm ball is the average size asked for out there, and this not often. More commonly a mixture of white turpentine 1 oz. and raw linseed oil 1¼ pint is used in place of balls. Another Australian physic-mass, which is a variant of Elliman's, is—

Barbadoes Aloes	℥xvj.
Castor Oil	℥iss.
Glycerin	℥iss.
Powdered Ginger	℥j.

Melt the aloes, along with the glycerin, by means of a water-bat then add the castor oil; finally, stir in the ginger.

Condition Balls.—'Condition' is a term used variously, but with horsemen it means one of two things—either 'hard' condition or 'show' condition; and the individual who would gain a name for condition balls should clearly understand which condition it is he proposes to assist in bringing about.

The condition of the hunter, or even of the fast hack or harness horse, is 'hard'—that is to say, the muscles are in the condition of a prize-fighter, who 'trains' off his fat and develops his fibres to the greatest degree of strength for muscular exertion and heart and lung power ; the condition of which latter organs more often decides a race or a fight than the muscles of the limbs, as it is upon the respiration and circulation that endurance depends.

To condition a horse for racing, hunting, or trotting, first give him a dose of aloes or physic proportionate to his size and breeding ; for a medium-sized animal of about fifteen hands the average dose of aloes is 5 or 6 drachms, and rather more or less according to size ; say, 4 drachms for a pony and 8 for a carthorse ; the physic to be followed by balls or powders according to breed. Of actual training we do not propose to speak here, but merely to indicate the most suitable medicaments. For 'hard' condition, then, we would say, give those remedies which will aid assimilation of food, help the skin to act and cast the old coat, enabling the superficial nerves to receive that stimulus from the fresh air that a horse in his natural grease can never know, and, to use the words of Professor Simonds, 'call upon those emunctories the kidneys.' The use of diuretics is very common, and too frequently abused ; but no condition powder or ball will do its work thoroughly unless it assists the kidneys to get rid of the vast amount of effete material which is the necessary result of so much waste of muscle and other tissues in large animals. The following is a formula for a ball which closely resembles one of much renown :—

Hyd. Subchlor.	gr. xv.
Pulv. Aloes Socot.	ʒss.
Potass. Nit.	ʒij.
Pulv. Ipecac.	ʒj.
Sapon. Duri	ʒj.

M. ft. bolus. Bis hebdomada.

The administration of these balls should not be continued for more than a month, as the horse is very susceptible to liver stimulants. He will often vastly benefit by the preceding, but if the treatment be too long continued he will go down again and lose his bloom. The following is also a good ball with a very wide sale, and may be given to a 'bad thriver,' or horse that habitually requires assistance to prevent him having blotches and swellings, and also in cases of loss of appetite :—

Sulph. Subl.	ʒij.
Potass. Nit.	ʒj.
Antim. Oxysulph.	ʒj.
Pulv. Fœnugræc.	ʒij.
Lini Cont.	ʒj.

Theriacæ q.s. ut ft. bol.
Omni alt. nocte sumend.

Show Condition.—To bring about the best results, artificial feeding and the use of various cordials are resorted to. Everyone admires, while condemning, the carthorse parade and the fat ponies that are shown for prizes, and as long as the public will give premiums for horses unnaturally fat there will be a demand for those agents which help the process. They are : Cordials, stimulants, carminatives, digestives, diuretics, and diaphoretics ; but if there is sufficient time, it is always best to begin, as before, with a dose of 'physic' proportionate to the size of the animal. This is followed by a course of doctoring which is by no means to be invariably recommended. The basis of nearly all the advertised horse and cattle spices is salt, lentil-flour, and fenugreek [several recipes will be found in the formulæ chapter]. But the effect of these condiments is greatly augmented by such agents as sulphur, antimony, nitre, etc., which enable the skin and kidneys to get rid of superfluous material that is liable to cause eruptions or blotches just as the show-week is approaching. There is another agent that makes the coat shine with less trouble than elbow-grease and antimony, and that is acid. sulph. daily in the drinking-water. This is the remedy which cunning carters use, who would rather buy a penn'orth of oil of vitriol than give a fair amount of strapping to their team.

For balls to help show condition the following cannot well be beaten :—

Antim. Oxysulph.	ʒj.
Gran. Parad.	ʒj.
Pulv. Zingib.	ʒj.
Sulph. Flor.	ʒij.
Potass. Nit.	ʒj.
Carbo. Animal.	ʒj.

Glycerini vel Theriacæ q.s. ut ft. bolus.
Bis hebdomada.

The following is also a good condition ball :—

Pulv. Resinæ	ʒij.
Sapon. Duri	ʒj.
Pulv. Fœnugræc.	ʒj.
Pulv. Anisi	ʒj.
Pulv. Gentianæ	ʒj.
Antim. Tart.	ʒij.
Pulv. Carui	ʒj.

Excipient. q.s. ut ft. bol.
Omni nocte.

If there is an objection to antimony, give the following :—

Potass. Bicarb.	ʒij.
Sodii Chlor.	ʒij.
Pulv. Zingib.	ʒij.
Sulph. Flor.	ʒij.

Excipient. q.s. ut ft. bol.
Omni nocte.

It is hardly necessary to say that the sodium chloride should be moderately dry, and the least amount of excipient used, or the balls will absorb moisture and fall.

Condition Powders.—When the attendant is capable of giving balls they are always to be preferred to powders, because alterative doses of aloes and other nauseants can be given which the horse will not eat in a mash or with corn. But there are always more buyers of condition powders than of balls, and to suit them the chief ingredients of the recipes given above may be combined, omitting the important agent aloes, and without the soap, though some horses will eat aloes if properly powdered and flavoured with salt, etc.; but then some horses will eat dung and leather, and we must here prescribe for the average horse, who is very easily put off his feed by the smell of drugs. The following is the next best thing to the ball first mentioned:—

Hydrarg. Subchlor.	gr. xv.
Potass. Nit.	ʒij.
Pulv. Ipecacuanhæ	ʒj.
Pulv. Gentianæ	ʒj.
Pulv. Anisi	ʒj.
Pulv. Gran. Parad.	ʒj.

Bis hebdomada.

This may, of course, be coloured with Armenian bole, turmeric, or other innocuous material.

The second ball, in powder form, is very palatable on account of the fenugreek. If, however, a horse refuses it, add to each dose

Sodii Chlorid.	℥j.
Pulv. Anisi	ʒj. M.

None of these agents is expensive, but for those who want a still cheaper horse-powder to sell in tins of ¼ lb., ½ lb., and 1 lb., there is nothing better than the old-fashioned mixture of equal parts of pot. nit., sulph. flor., and antim. nig. Half-ounce doses of mag. sulph., sufficiently dried, powdered, and mixed with salt, flavoured with a drop or two of ol. anisi or ol. carui, make a good powder for giving bulk to the above, and a good thing for swellings, as we shall presently show in dealing with alteratives, etc. For a powder with more tonic properties mix ferri sulph. 2, pulv. gentian. 2, and pot. nit. 1, and give ½ oz. for a dose. The following is a good condition powder:—

Sulph. Flor.	ʒj.
Potass. Nitrat.	ʒj.
Sodii Bicarb.	ʒij.
Acid. Arsenios.	gr. v.
Boli Armenian.	q.s.

Fiat pulv. One daily in food.

The chief analyst of the Laboratory of the Inland Revenue Department, Ottawa, Canada, recently examined thirty-five samples of condition powders which are given for the purpose of improving the appearance of animals, and he found that they consist largely of linseed meal, oil-cake meal, or bran, in which is distributed more or less of other substances which are supposed to have purgative, diuretic, hæmatinic, or tonic effects. These powders are, in fact, the proprietary or patent medicines supposed to be good for farm animals. They vary very much as regards composition. Some condition powders contain chlorides and nitrates; in others such salts are absent; a third class has sulphates in addition to chlorides and nitrates; in a fourth only the sulphates are present in considerable quantity; in some free sulphur appears to be the characteristic constituent, and in others antimony. It does not seem fair to the farmer that remedies differing so much in their ingredients should be sold under a common name, nor can it be advantageous to his animals to have medicines administered without much regard to the nature of the disease. The 'regulators' contain, as a rule, iron salts, but otherwise are just as diverse in composition as the condition powders. Among the specific remedies the worm-powders exhibit similar diversity in composition, and do not seem to contain the drugs usually prescribed by veterinarians as vermicides. That there are remedies for specific diseases, used in veterinary practice, which are sold as such, is no doubt the case, but as regards the universal cattle-medicine or 'cure-all,' it is very doubtful as to whether the farmer obtains value for his money.

In Melbourne, Victoria, there is a ready sale for condition powders, or, rather, spice; something that will 'fatten horses and pigs, increase the supply of milk and eggs,' as is claimed by some well-known condition powders. That demand extends far inland, although there much minimised, and retailers are compelled to cater for it. The following are typical combinations :—

Condition Powders for Horses.

Powdered Gentian	2 oz.
,, Saltpetre	½ oz.
,, Sulphur	2 oz.
,, Resin	1 oz.
,, Fenugreek	1 oz.
,, Ginger	2 oz.
,, Cayenne Pepper	1 oz.
,, Black Antimony	2 oz.
,, Linseed	5 oz.
,, Elm Bark	5 oz.
,, Blood Root	1 oz.
,, Ferrous Sulphate	5 oz.
,, Sodium Sulphate	4½ oz.

Dose : A dessertspoonful twice a day.

Maud S. Condition Powder.

Dried Sulphate of Iron	5 oz.
Powdered Cantharides	1 oz.
,, Black Antimony	6 oz.
,, Ginger	3 oz.
,, Saltpetre	5 oz.
,, Sulphur	10 oz.
,, Linseed	10 oz.
,, Gentian	7 oz.
,, Cream of Tartar	3 oz.
,, Resin	5 oz.
,, Aniseed	5 oz.

Dose : A tablespoonful in feed once or twice a day, or given in capsule as a ball.

German Cavalry Condition Powders.

Common Salt	1 oz.
Glauber's Salt	2 oz.
Sodium Bicarbonate	2 oz.
Juniper Berries	2 oz.
Gentian	2 oz.
Ginger	2 oz.
Linseed	5 oz.
Fenugreek	10 oz.
Asafetida	80 oz.
Fennel	44 oz.

Dose : For horse or cow, a heaped-up teaspoonful with food once or twice a day.

Condition Powder.

Black Sulphur	8 oz.
Gentian	2 oz.
Black Antimony	2 oz.
Resin	2 oz.
Saltpetre	4 oz.
Diapente	2 oz.
Fenugreek	4 oz.
Linseed, Crushed	2 oz.
Ochre	2 oz.
Oil of Aniseed (sometimes)	20 drops

Dose : A tablespoonful with feed.

Alteratives.—Alterative medicines are in constant demand, especially in the spring and early autumn, when the shedding of the coat produces a certain amount of debility or lassitude, or when from previous clipping or exposure the skin does not act freely. Indigestion or surfeit, causing eruptions, urticaria, or water-bumps, and a variety of skin affections too numerous to mention, is treated with alteratives, and more frequently than not with success, unless the irritation of the skin arises from parasites, such as mange, of which we treat later on.

The following balls and powders are intended as alteratives rather than as diuretics, though a combination is frequently and advantageously made. When a horse is 'out of sorts,' or does not feed well, or passes his dung with difficulty, or the dung is a bad colour, and from these symptoms and his general behaviour he appears to be out of health, but not sufficiently bad to send for a veterinary surgeon, he may be given a few of these balls or powders without having to knock off work—a most important consideration.

Aloes Barb.	℈ij. ad ʒj.
Pulv. Zingib.	ʒij.
Ext. Tarax.	ʒj.
Pulv. Calumb.	ʒj.
Sodii Carb. Exsic.	℈j.
Mag. Sulph. Exsic.	ʒj.

Theriacæ q.s. ut ft. bol.

Capt. j. omni nocte.

This may be given as a powder by omitting the aloes and taraxacum, and substituting fenugreek or sodium chloride.

Another good alterative where the lymphatics are concerned, corded veins or swollen glands (as distinguished from ordinary swollen legs), or where farcy is suspected, is the following :—

Cupri Sulph.	ʒj.
Antim. Tart.	ʒss.
Pulv. Helleb. Alb.	gr. x.
Potass. Nit.	ʒij.
Lini Cont.	ʒiv.
Excipient. q.s. ut ft. bol.	

Omni nocte.

This can be given as a powder with damped food, as very few horses object to eat copper sulphate, especially if a little fenugreek, anise, or caraway is added.

Diuretics should not be too frequently resorted to, though they are of great benefit when judiciously administered. They excite absorption of fluid in the limbs, sheath, etc., which should be assisted by exercise and diet. They should not be given too freely or for a prolonged period, as they are very prone to cause nephritis. The following are valuable recipes :—

I.

Styracis	ʒss.
Sapon. Duri	ʒij.
Resinæ	ʒiss.
Potass. Nit.	ʒiss.
Pulv. Zingib.	ʒj.
Ol. Juniperi	♏xx.
Excipient. q.s. ut ft. bol.	

II.

Tereb. Ven.	ʒiij.
Potass. Nit.	ʒij.
Pulv. Juniperi	ʒij.
Pulv. Zingib.	ʒiss.

M. ft. bol. Pro re natâ.

III.

Resinæ Flav.	℥xxx.
Potass. Nit.	℥xv.
Adipis	℥vj.
Ol. Lini	℥vj.
Ol. Juniperi	℥j.

Melt the resin and add the linseed oil and the lard. Next add the nitre and stir till nearly cold ; add the oil of juniper, then transfer the mass to a slab and work up with glycerin.

Cordial Balls.—These are given to horses which are faint and off their feed on returning from hunting, racing, or fast work—where, in fact, the muscular system is superior to the digestive, and the 'spirit carries them beyond their strength.' A cordial ball given at such times is of great value, restoring a flagging heart and circulation, which by the morning might result in congestion of the lungs. The following is an excellent cordial ball, but has the disadvantage of not keeping well. It is for such balls that gelatin capsules are suitable :—

Ammon. Carb.	ʒiss.
Camphoræ	ʒss.
Pulv. Digitalis	ʒj.
Pulv. Gentianæ	ʒij.
Pulv. Zingib.	ʒiv.

Excipient. q.s. ut ft. bol.

The foregoing formula is a favourite in the Army Veterinary Department, and is supplied to Transport Veterinary officers. Two or three of these balls may be given in eight or ten hours, but should not be persisted in.

The following is *Massa Zingiberis Composita* or cordial mass of Tuson's 'Veterinary Pharmacopœia' :—

Pulv. Zingib.,	
Pulv. Gentianæ	aa. part. æqual.
Theriacæ	q.s.

M. ft. bol. Dose, ℥j.

The next ball is much approved in hunting-stables, and can be well recommended.

Pulv. Gentianæ	ʒj.
Pulv. Zingib.	ʒij.
Pulv. Cassiæ	ʒij.
Pulv. Capsici	gr. xx.
Ol. Anisi	♏xx.
Pulv. Fœnugræc.	ʒij.
Excipient. q.s. ut ft. bol.	

Customers should be advised to pull the ears of the animal, bandage the legs, clothe the body, and thus seek to obtain surface warmth.

Fever Balls.—These are not so much in demand as formerly, when clinical thermometers were not in general use and the subject of fever was less understood. An effective, good, and practical fever ball is composed of equal parts (ʒj. to ʒij., according to the size of the horse) of ammon. carb., mag. sulph., and potass. nit. The following may be given in undefined fever, with cold ears and legs and staring coat :—

Pulv. Camphor.	ʒss.
Potass. Nit.	ʒij.
Antim. Tart.	ʒss.
Lini Farin. ad	℥j.
Mellis q.s. ut ft. bol.	

Not to be given oftener than twice a day, or continued for more than three or four days. For the tartar emetic may be substituted calomel 15 grains and opium 15 grains. Where a stimulant is also required use :—

Ammon. Carb.	ʒj.
Pulv. Camphor.	ʒj.
Potass. Nit.	ʒij.
Pulv. Gentianæ	℥ss.
Glycerini q.s. ut ft. bolus.	

Sig. : One to be given night and morning.

Tonics.—Both the vegetable and mineral worlds afford considerable latitude in the choice of tonics, though in veterinary practice only a few are commonly used. Selection is guided by the cause of the debility. As a rule, when the weakness depends upon some blood-poison or excessive drain upon the system, such as extensive suppuration, dropsy, etc., mineral tonics are most useful ; when it is the sequel of some acute disease, as pleurisy, or accompanied by an irritable stomach, vegetable tonics are preferable. It is often desirable to combine tonics with other medicaments, as with stomachics or diuretics. As regards the form of administration, balls or powders are the most convenient. Sometimes draughts are necessary, as in the combination of stimulants, such as ether, with tinctures.

A valuable stimulating tonic for cattle convalescent from any very exhausting disease—*e.g.*, pleuro-pneumonia (non-contagious), or during the later stages of red-water—is the following :—

Æther. Sulph.	ʒij.
Tr. Zingib.	ʒij.
Tr. Gentianæ	ʒij.

Misce pro dose.

Four doses as above—one every six hours in a pint of gruel.

Of mineral tonics, iron, copper, and arsenic are the favourites. Of the preparations of iron, the sulphate is the only one commonly used for horses and cattle. It is generally given combined with some aromatic, as—

Ferri Sulph.	Partes æquales
Pulv. Gentianæ	
Pulv. Carui	

This to be made into balls with treacle, or given in powder with the food. Coriander or ginger may be substituted for the caraway. Sulphate of copper is sometimes used in place of iron, and it seems of special value in cases of chronic nasal discharge. The ordinary dose of either iron or copper sulphate for horse or ox is 2 drachms, but in the above cases this can be doubled. As much as 5 drachms of sulphate of iron has been given daily for three weeks, but there is always a tendency to constipation with such doses, and the fæces are blackened, owing to formation of iron sulphide in the bowels. To guard against constipation, small doses of linseed oil or the frequent admixture of bran or other laxative food are recommended.

A good tonic ball may be made from the subjoined formula :—

Ferri Sulph. Exsic.	ʒij.
Potass. Carb.	℥ss.
Pulv. Nucis Vom.	ʒss.
Acid. Arsen.	gr. iij. ad gr. viij.
Glucos. vel theriacæ q.s. ut ft. bol.	

It is sometimes desirable to give iron in a less astringent form than the sulphate, but experience proves that with the water of crystallisation in it, it is more active and less irritating to the stomach than many of the more elegant preparations preferred in medical practice. The following formula for the solution commonly known as 'dialysed iron' fulfils the requirements :—

Take of liquor ferri perchlor. fort. ℥xxx., dilute with 2 pints of water, and add ammonia solution in slight excess; allow to stand one hour, and wash the precipitate by decantation until the washings give no precipitate with nitrate of silver solution; throw the precipitated oxide of iron on a filter, and drain well. Now dilute 5 oz. more liquor ferri perchlor. fort. with 1 pint of water and dissolve in it the precipitate obtained above, and make the solution measure 140 oz. The result is a dark red-brown liquid, 1 oz. containing an equivalent of 32 grains of ferric oxide. The dose for horses and cattle is 1 to 2 oz., diluted with water to 10 oz.

Each ounce of the above solution contains the same weight of iron as 68½ grains of sulphate, but only 11½ grains of hydrochloric acid, as compared with 23½ grains of sulphuric acid in the equivalent proportion of ferrous sulphate.

An excellent tonic mixture is made by dissolving quinine hydrochloride in this solution, with the addition, if necessary, of a few drops of dilute hydrochloric acid.

Tincture of ferric chloride and syrup of ferrous iodide are valuable preparations for dogs. The dose of the tincture for dogs is from five to thirty drops, and it may be given with infusion of quassia. The following is a good form for a dog recovering from pleurisy :—

Syrupi Ferri Iodidi	℥j.
Infus. Gentianæ	℥iij.
Tr. Zingib.	℥iss.

M. fiat mist.

A dessertspoonful three times a day.

Another valuable mineral tonic (for horses) is arsenic, sometimes given as a powder, incorporated with sugar of milk or carbonate of potassium. The following is a good prescription :—

Acidi Arseniosi	gr. viij.
Pulv. Ferri Sulph.	ʒij.

M. ft. pulv.

Once a day with the food.

Arsenic is specially useful in cases of broken wind, chronic cough, and in such skin diseases as do not depend upon parasites, but such powders as the above should be supplied only to responsible persons : carters and others are prone to increase the dose and continue to use ‘coat-shiners’ in lieu of ‘elbow-grease.’ It should also be known to readers that the employé who gives such drugs without his master’s knowledge is liable to imprisonment for unlawfully administering them.

The best preparation of arsenic for dogs is Fowler’s Solution, in doses of from 2 to 8 minims. The following mixture is recommended :—

Liq. Arsenicalis	ʒj.
Syrup. Zingiberis	ʒiij.
Aquam ad	℥vj.

A tablespoonful thrice a day. Useful in skin diseases, and in chorea or other nervous affections following distemper.

For skin pimples on stock, a New Zealand authority recommends liquor arsenicalis 5 drops in water every day.

The same authority says that dandruff in horses has been eradicated by a mixture of 1 lb. of soft soap, 1 quart of kerosene, and 3 gallons of hot water. Apply when cold.

Another mineral substance of great service is common salt, equal parts of salt and gentian forming one of the best of mild tonics. A tablespoonful twice a day for horse or ox.

Of vegetable tonics, cinchona probably deserves the first, and nux vomica the last, place, but the latter is considered to be a valuable liver tonic and digestive stimulant: a good medium is the much-used gentian. A useful general tonic is a mixture of equal parts of gentian, ginger, caraway, linseed meal, salt, and nitre, in tablespoon doses.

A more powerful tonic for horse or ox is—

Powdered Cinchona	ʒiv.
Powdered Quassia or Gentian	ʒij.
Powdered Aniseed	ʒij.

Can be given as a powder, or made into a ball with treacle.

For a dog the following is recommended:—

Pulv. Cinchonæ	ʒiv.
Ext. Gentianæ	ʒij.
Syr. Glucosi	q.s.

Fiat massa et div. in pil. XL.

Two to be given twice a day.

Quinine made into pills with glycerin of tragacanth is of equal value. Dose, 1 to 8 grains. For horses or oxen 1 to 2 drachm doses, and more, of quinine sulphate are sometimes prescribed, but it is doubtful if quinine is as good as cinchona.

If a tonic is required after influenza or other chest affections, the following may be used:—

Pulv. Gentianæ	ʒij.
Pulv. Calumbæ	ʒij.
Pulv. Cinchonæ	ʒiij.
Pulv. Opii	gr. xx.

Excipient. q.s. ut ft. bol.

Bis die.

The balls may also be made with liq. strychninæ hydrochlor. ʒj. in each.

A little green food or bran mashes should be given with these, as small doses of opium tend to constipate, though acting as a tonic and stimulant. Colonel F. Smith, of the Army Veterinary Department, and other prominent men hold that opium is better as a stimulant and tonic than as a sedative in large doses. The ingredients in the last formula may be given as a powder, flavouring with salt, fenugreek, or aniseed.

Nux vomica and strychnine, as nervine tonics, are sometimes given to dogs in the following doses :—

Nux Vomica	$\frac{1}{4}$ to 1 grain
Strychnine	$\frac{1}{120}$ to $\frac{1}{32}$ grain

Nux vomica and strychnine are, however, unsafe medicines for dogs, and chemists had better avoid them.

Balls for Swollen Legs.—For a general ball for swollen legs in horses, where there is no opportunity to go into the particulars of the case, the following can be given with safety, and repeated at comparatively short intervals :—

Pulv. Helleb. Alb.	gr. viij.
Potass. Chlor.	℈ij.
Cupri Sulph.	ʒiss.
Pulv. Nuc. Vom.	gr. xv.
Pulv. Resinæ	ʒij.
Potass. Nit.	ʒij.
Sapon. Duri	ʒiij.
Excipient. q.s. ut ft. bol.	

Cough Balls.—In the early part of the winter, when horses are first clipped, they are apt to take cold and suffer from cough, which can be greatly relieved by a few balls or powders, and these should be ready to hand as the season comes round. Cough balls and powders should be of two kinds—those for temporary or acute cough, and those for chronic cough.

Ball for Acute Cough.

Pulv. Camphoræ	ʒj.
Ext. Belladonnæ Sicc.	ʒj.
Pulv. Opii	ʒss.
Pulv. Scillæ	ʒss.
Pulv. Anisi	ʒij.

Excipient. q.s. ut ft. bol.

This ball may be given night and morning, and a little lin. saponis prescribed for the throat if a difficulty in swallowing is evinced.

Chronic cough and broken wind are a condition in many old horses, and it is surprising how horses so affected can be kept going by the aid of medicines, especially those containing tar and fats, though dieting is a very important factor, and should not be forgotten by the prescriber if he would get fair credit for his treatment. The food of such horses should be given damped, very little hay or bulky food, with a bed of moss litter or sawdust: that they will not eat. Linseed oil or linseed mashes or tea should also be given frequently.

Chronic Cough Balls.

Gum. Ammoniaci	ʒj.
Pulv. Digitalis	ʒj.
Pulv. Camphoræ	ʒj.
Pot. Nit.	ʒj.
Pulv. Belladonnæ Fol.	ʒj.
Bals. Sulphur.	ʒj.
Picis Liquidæ	ʒij.

Lini Cont. q.s. ut ft. bol.

Omni nocte.

This is rather a messy ball, on account of the tar and balsam of sulphur, but is so good in its effects that the dispensing objection should be disregarded.

Another good ball may be made by mixing equal parts of melted and strained mutton fat and tar, using this mixture as an excipient, and working up into balls of nearly 2-oz. weight with the dry ingredients of the above ball.

If a powder is desired (it would not be so effectual), the same dry ingredients may be used with 2 or 3 drachms of liquorice powder as a substitute for the camphor, tar, and balsam of sulphur. A very good powder for coughs is the following:—

Pulv. Digitalis	ʒss.
Pulv. Belladonnæ Fol.	ʒj.
Potass. Chlorat.	ʒj.
Potass. Nit.	ʒj.
Pulv. Opii	ʒss.
Pulv. Glycyrrh.	ʒiv.

M. ft. pulv. Omni nocte c. cibo.

We add two favourite recipes for stock cough balls:—

Pulv. Ipecac.	ʒj.
Pulv. Scillæ	ʒj.

Mellis et Pulv. Glycyrrh. q.s. ut ft. bol.

Pulv. Ammoniaci	ʒiv.
Pulv. Zingib.	ʒiss.
Pulv. Scillæ	ʒj.

Mellis et Pulv. Glycyrrh. q.s. ut ft. bol.

Cough and Sore Throat Electuary for Horses.—Either of the following may be used as an electuary:—

Ext. Belladonnæ Sicc.	ʒj.
Mellis	ʒj.
Glycerini	ʒj.
Potass. Chlorat.	ʒj.

M. ft. electuarium.

Ext. Belladonnæ Sicc.	ʒj.
Camphoræ	ʒj.
Ammon. Chlor.	ʒij.
Acid. Hydrocyan. Dil.	♏xx.
Theriacæ	q.s.

M. ft. electuarium pro dose.

To be given on a bone spatula by pulling out the tongue and smearing on the thick portion. It may be well to mention here that in nearly all coughs, save those chronic ones connected with digestive troubles, a stimulating liniment should be supplied, with advice to rub it well into the throat. Lin. ammon. or lin. camph. co. is suitable, and may be repeated until counter-irritation is proved by the lifting of the cuticle. The formula for a liniment given on page 41 is very popular among veterinary surgeons, masters of hounds, and others with experience of the subject. Balls should never be given when horses have sore throats.

Gripe Medicines for Horses.—If colic arises from drinking well-water, and is but a simple spasm, it will generally pass off with a stimulant or the gripe remedies in common use, but a number of horses die annually for want of an aperient in the first gripe dose they get. This is so well known to practitioners that the majority of country vets. put a solution of aloes in their draughts, and write directions upon the label to give a pint or more of linseed oil with the draught. An effectual gripe draught for general use, without stopping to inquire into particulars, or without the advice of a practitioner, should contain an aperient, must be of some considerable bulk, and cannot be very cheap. The anodynes used in medicine for horses have undergone a considerable modification of late years, as experiments have proved that some of the old agents have not been correctly understood, and more direct sedatives have come into use. For controlling pain it is found that ext. cannabis ind. and chloral and croton chloral, where impaction exists, answer well. The following draught has been proved to be more useful than any other combination, but it has the objection of being rather expensive:—

Sol. Chloral. Hyd. (1 gr. in 1 minim)	ʒij.
Ext. Cannabis Ind.	ʒij.
Ol. Terebinth.	℥ij.
Spt. Ammon. Arom.	℥j.
Sol. Aloes (1 in 4)	℥ij.
Ol. Lini ad	℥vj.

M. ft. haust.

To be given in from ½ to 1½ pint of linseed oil, but not to be repeated without the advice of a veterinary surgeon.

This draught is an aperient, a diuretic, and an antispasmodic; it allays pain and checks inflammation, and if gripes arise from impaction it does valuable work while the veterinary surgeon is being sent for. Such a dose ought to be charged

2*s.* 6*d.* For a cheaper draught either of the following may be supplied:—

Sol. Chloral. Hydrat. (1 in 1)	℥j.
Spt. Æth. Nit.	℥iss.
Bals. Copaibæ	℥ss.
Liq. Potassæ	℥ss.
Ol. Terebinth.	℥iv.
Ol. Lini ad	℥viij.

M. ft. mist.

A fourth part for a dose, in from $\frac{1}{2}$ to 1$\frac{1}{2}$ pint of linseed oil.

Chloral. Hydrat.	℥ss.
Liq. Morph. Mur.	℥j.
Aquæ	℥x.

Fiat haustus.

Often, when all else fails to give relief, the following may be given, especially if there is a suspicion of inflammatory conditions:—

Tinct. Opii	℥j. ad ℥ij.
Spt. Camph.	℥j.
Tinct. Aconit. B.P.	♏x.

Mix, and administer in a pint of cold gruel or old ale.

A good laxative *Colic Drink* for horses is—

Aloes	ʒij.
Amm. Carb.	ʒij.
Spt. Æther. Sulph.	℥j.
Aquæ	℥xij.

For one draught. It is an excellent remedy.

It is interesting to note that in Australia 90 per cent. of the calls for horse medicines are for gripe treatment. The horse in those parts—subjected to the vicissitudes of droughts, often brought to the verge of death with starvation, often penalised through the carelessness or ignorance of his master—is too frequently a victim to gastric and intestinal troubles. Spt. ammon. co., spt. ætheris sulph., and other elegancies are out of the question, for the poor sufferer may be fifty or more miles from a drug shop; fortunately, chimney soot is at hand,

and it is a splendid remedy. It is used in certain districts effectually. The soot does not seem to be administered in any regulated dose, but as much as can be got down is given as a drench.

When a hungry horse has found his way to a bag of wheat, he has small consideration for his digestive ability. Consequently he becomes a sufferer in time from 'windy gripes,' but is readily relieved with a warm drench containing—

Sodii Bicarbonat.	℥iv.
Ol. Terebinthinæ	℥ij.

In the treatment of gripes, regard must be had to the necessity of including an aperient, and the first dose should contain aloes with the usual remedies.

In severe diarrhœa, which is a common complaint in Australia, a drench of bismuth, opium, catechu, and ammonia frequently acts like a charm.

Another gripe drench, and one that has never failed, is—

Tr. Opii	℥j.
Spirit. Æther. Nit. . . .	℥j.
Ol. Terebinth.	℥ij.

Give half in gruel or warm water at once; repeat in half an hour if animal is not relieved. Use hot cloths over loins.

Outward Applications for Horses.

White Oils.

Vitellos	xij.
Sapon. Moll.	℥vj.
Ol. Terebinth.	℥xx.
Liq. Ammon. Fort. . . .	℥v.
Acidi Acetici	℥iv.
Camphoræ	℥vj.
Spirit.	℥viij.
Ol. Succini Rect.	℥iv.
Aquam ad	Oiv.

Rub the soap gradually with 10 oz. of water to form a smooth jelly; add the spirit with the camphor dissolved in it; mix the turpentine and the oil of amber; add gradually to the mixture, stirring assiduously the while, and aiding emulsification by the occasional addition of a little water. Then add the ammonia. Now transfer to a Winchester, add gradually the acetic acid diluted with a pint or more of water; add the eggs one by one, well shaking all the time, and finally make up to 80 oz. with water.

This liniment is better without the acid.

For Sprains and Bruises, where the skin is not broken, we recommend—

Tinct. Arnicæ	℥j.
Liq. Plumbi	℥j.
Tinct. Opii	℥j.
Glycerini	℥j.
Aquam ad	℥vj. M.

To be mixed with a gallon of rain-water, and applied on wet bandages. This is equally good for horned stock. For a *Cooling Lotion* try—

Potass. Nitratis	℥iv.
Sacchari Usti	ʒj.
Aquæ	℥xxx.

Misce fiat lotio concentrata.

To be mixed with 2 gallons of water and applied on swabs or bandage to the affected part.

Saddle and Harness Galls.—Nos. 1 and 2 are good and cheap *lotions*, and Nos. 3 and 4 make saddle galls disappear very quickly:—

1.

Acid. Sulph.	ʒj.
Alum. Exsic.	ʒij.
Aquam ad	Oss.

M. ft. lotio. Sæpe utend.

2.

Potass. Permang.	gr. x.
Pulv. Alum.	℥j.
Aquæ	Oj.

Misce.

3.

Tannin.	℥j.
Glycerini	℥viij. S.

4.

Aluminis, Zinci Ox. et Pulv. Gallæ āā	ʒj.
Indigo	q.s.
Adipis	℥j. M.

Apply twice daily.

No. 2 should be made up as wanted, and not kept in stock.

Always advise padding, as cutting out the collar or harness does not always prevent rubbing the scabs off, when remedies will be vain. *Ointments* are not so good as lotions, but if one is preferred, the following should be applied night and morning and kept on the sores :—

Alum. Exsic.	ʒj.	
Zinci Oxidi	ʒj.	
Pulv. Gallæ	ʒj.	
Adipis vel Vaselin.	℥j.	M.

Broken Knees.—Poultice for two days with linseed meal, adding to each poultice—

Acid. Carbolic.	ʒss.	
Oleum Olivæ ad	℥j.	M.

This may with advantage be coloured with ol. viride or alkanet, or 'nosed' with a minim or two of oil of cloves, which latter is a fashionable remedy for broken knees. Instead of poulticing, the wound may be sponged occasionally with warm water (carbolised if desired) for a day or two, and after carefully drying, apply carbolised oil (1–40).

Ol. terebinthinæ	℥v.	
Chloroformi	℥iiss.	
Acid. carbol. pur.	℥iij.	
Ol. olivæ ad	℥xxxvj.	M.

May be coloured with alkanet.

This mixture is a grand preventive of *proud flesh*, and is specially recommended in the treatment of broken knees, in which it causes rapid improvement or healing.

When proud flesh appears it is soon enough to use—

Zinci Chlor.	gr. x.	
Sacch. Usti	q.s.	
Aquam ad	℥x.	M.

To be applied daily after fomenting with cold water.

Another application for broken knees which do not heal readily is red iodide of mercury ointment, 1 in 8, applied on lint and held in place by a bandage, re-dressing every second day. This is good for many other indolent wounds, such as cracked heels, and similar sores.

A still more frequent difficulty is that of repressing proud flesh, as too profuse granulation is called. It is this overgrowth upon knees that leaves them 'bumbly' and with restricted mobility. A rough but excellent plan is to touch over the surface with a hardened lunar-caustic point one day, and rub off the scab the next. If this is done several times, the skin is more nearly approximated, and the subsequent blemish smaller, than by any other method of treatment.

Wounds in horses, cattle, and sheep (not dogs) should be treated with—

Acid. Carbolic.	ʒvj.
Ol. Sesami Colorat. ad	℥xx. M.

This prevents suppuration and causes union by adhesion in small wounds that have not been exposed to the air, and does old ones good. It takes the sting out of finger-cuts marvellously. For old and gangrenous wounds, or for maggoty sheep, etc., it may be made twice as strong.

Blisters.—The blistering agent most esteemed by practical veterinary surgeons is red iodide of mercury, and the following are good combinations:—

For a Splint or Spavin.

Hydrarg. Biniod.	℥j.
Adipis	℥vij.

M. ft. ungt.

Pulv. Cantharid.	℥j.
Adipis	℥viij.

Digest on a water-bath for six to eight hours; strain, and when it begins to set mix with it—

Hydrarg. Biniod.	℥j.

For a thickened tendon or slight sprain, or to brace a joint, reduce wind-galls or soft enlargements, one part of biniodide to twelve of lard or vaseline may be used. A simple *Cantharides Blister* may be made by digesting cantharides 1, resin 1, and lard 7, for six to eight hours, and straining. The first formula on the next page is a Scotch favourite.

Blistering Ointment.

Cantharides	1 lb.
Resin	1 lb.
Venice Turpentine	1 lb.
Prepared Lard	3 lb.

Digest all together on a water-bath for five hours, and stir while cooling. Two ounces of this will reduce any sprain.

Liquid Blister.

Pulv. Cantharidis	℥j.
Ætheris	℥j.
S.V.R.	℥viij.
Ol. Origani	℥ss.

Pour the ether over the cantharides, and let it stand for a day in a well-closed bottle. Then add the rest, macerate eight days, and filter.

A useful preparation in splints, side-bone, ring-bone, spavin, or other bony deposit, is—

Hydrarg. Perchlor.	℥j.	
S.V.R.	℥viij.	M. et S.

A small quantity is to be *lightly* rubbed into the affected part. When used carelessly this is extremely liable, in any but competent hands, to cause destruction of the hair-bulbs and subsequent baldness—a very serious objection.

A blister much used in Yorkshire, and valued for its quick action with very little pain to the patient, is made by digesting cantharides in pale olive oil with heat, and filtering out every particle of the flies. The ointment is made by the addition of white wax and a little turpentine oil.

Charges are used much as plasters are in human practice, and considerable benefit is derived from their judicious employment. They should be made liquid in a water-bath and applied as warm as the animal can well bear them. There are various forms, all of which have their peculiar virtues. Youatt's formula is a good one, as follows:—

Burgundy Pitch	℥v.
Tar	℥vj.
Wax	℥j.
Cantharides	ʒss.

The hair should be clipped close, and the operator should oil his hands. A quantity of tow cut into half-inch lengths is convenient to stick on the charge while still warm. It looks better than a cluster of brambles, which will likely enough be found sticking to the plaster if left uncovered.

The following are also good, according to requirements:—

Resin. Pulv.,
Emp. Hydrarg.,
Emp. Roborant.,
Gutta Percha . . āā. pts. æq.

Resin. Pulv.,
Emp. Plumbi,
Gutta Percha,
Emp. Roborant. . āā. pts. æq.

Hoof Ointments.—There is a consensus of opinion among the more advanced veterinarians that greasy applications are not merely undesirable but positively harmful. The alternate absorption and evaporation of water have a beneficial effect upon the hoof in the normal state. If the foolish custom is persisted in of rasping the outer layer off the hoof, in order to make it ship-shape, then an unctuous dressing becomes necessary, to replace the qualities for which the outer layer (periople) is remarkable.

The outer layer of horn on a horse's foot becomes hard from being the oldest layer and farthest from the secreting surface. The hardness is for a double purpose—for protection, and to keep pliable and tough the deeper layers. If it is removed the deeper layers become dry, and consequently brittle, thus predisposing the foot to 'sand-crack,' etc.

Hoof ointments, for convenience, must have a certain consistency, so as not to spill like oil if accidentally upset, and yet not to be so hard as to require warming for use. They must not be 'sticky,' as in that case the brush with which they are applied gets clogged, and straws and dirt stick to the foot; for this reason, wax should not be added to any hoof ointment. They must be of a dark colour, and for this purpose tar is a useful ingredient, besides its beneficial action upon any 'thrushes' which may exist. Lastly, they must wash off, so as not to interfere with the ready cleaning of the horse when necessary. This last quality is not absolutely essential to a good protecting hoof ointment, but its advantages must not be overlooked by those who wish to sell an eligible article. Perhaps, in giving formulæ, it would be better to divide them into two varieties—(1) those used for bad feet as a protecting agent, which contain no saponifying ingredient ; and (2) those which are used regularly as preventives and, like hair dyes and pomatum, are 'beautifying agents.'

The following are good of the first class :—

Barbadoes Tar	equal parts	Stockholm Tar	2 lbs.
Burgundy Pitch		Russian Tallow	1 lb.
Russian Tallow		Venice Turpentine	½ lb.

In mixing these, melt the last two ingredients together first, then add the tar and thoroughly mix.

The following preparations are samples of the second class :—

Stockholm Tar	3 lbs.	Stockholm Tar	4 lbs.
Soft Soap	4 lbs.	Soft Soap	4 lbs.
Fish Oil	½ pint	Tallow	2 lbs.
		Fish Oil	1 pint

Mutton Suet	1 lb.
Stockholm Tar	1 lb.
Resin	1 lb.
Yellow Wax	1 lb.
Castor Oil	1 lb.

Adipis Præp.	lb. j.
Mellis	lb. j.
Ceræ Flavæ	℥ij.
Resinæ	℥ij.
Acid. Carbol. Crud.	℥j.
Hydrarg. Subchlor.	℥ss.
Hydrarg. Perchlor.	℥ss.
Acid. Acetic.	℥vj.
Cupri Subacetatis	℥vj.

Melt the lard, wax, resin, and honey, then add the mercurials, bring to the boil, add the copper, stir well, and then add the carbolic acid. Remove from fire, add the acetic acid, and stir till cold. The product should be a liver-brown ointment.

Liquid Hoof Dressing.

Stockholm Tar	1 lb.
Tar Oil	4 oz.
Oil of Turpentine	2 oz.
Linseed Oil to	1 gal.

Ointment for Thrush or Canker.

Prepared Lard	1 lb.
Castor Oil	1 lb.
Resin	½ lb.
Sulphuric Acid	2 oz.
Tar	1 lb.

Melt the resin and lard, add the castor oil and tar; when getting cold add the acid gradually, with care, stirring constantly.

Lotions for Cracked Heels, etc.—The preparation commonly known in Scotland as the *White Bottle* consists of—

I.

Sulphate of Zinc	℥j.
Sugar of Lead	℥j.

Water, a reputed quart bottleful.

This is also largely used for sore backs, shoulders, and the like.

II.

Glycer. Aluminis	℥j.	
Theriacæ	℥j.	M.

To be applied with a brush after washing clean.

III.

Liq. Plumbi Subacet.	℥j.	
Ol. Lini	℥ix.	M.

To be applied before going to work and after returning home. In the earlier stages of sore back a mixture of glycerin and fullers' earth is beneficial.

Some Cattle Remedies.

In some districts where so-called milk fever is much dreaded, there is a call for *Cow Drenches* both before and after calving. The simplest aperients should be given before calving—say, a week, or even less—avoiding ergot, which should have a place in the after-calving or *Cleansing Drink*. There are a few fortunate individuals, chemists and veterinary surgeons, who enjoy a great reputation for drinks that prevent milk fever; but the secret is not in their private formulæ, but in getting stockowners to keep the in-calvers low. Six weeks on oat-straw and hay, and two or three doses of magnesium sulphate (suitably coloured), within a little while of calving, will bring a local reputation to anyone who can persuade his clients to adopt the regimen.

Since the earlier editions of this work were published, a revolution has taken place in the cleansing drench and the *ante-partum* dose also. The discovery of a toxin in the udder of cows suffering from so-called ‘parturient apoplexy’ has led to the administration of antiseptics as preventives as well as cures. A drachm or two of chinosol is a favourite remedy, with the inevitable magnesium sulphate to give bulk, and with or without colouring. Half-ounce doses of carbolic acid are also given, the vehicle being composed of any dry innocuous powder. Where the innate conservatism of a district will permit of so great a departure as the giving of a liquid draught in lieu of the time-honoured powder-drench, the following may be advised:—

Acid. Carbolic.	ʒiv.
Ol. Viridis	℥j.
Ol. Eucalypt.	ʒss.
Ol. Lini ad	Oj. M.

Old-fashioned Before-calving Drench.

Potass. Nit.	℥j.
Flor. Sulphuris	℥j.
Ferri Carb. Rub.	℥ss.
Diapentis	℥ij.
Sodii Sulph.	℥iv.
Magnesii Sulph.	℥iv. M.

Divide into two doses, and administer each in a quart of gruel.

After-calving Drench.

(Prescription of an eminent F.R.C.V.S.)

Pulv. Ergotæ	ʒj.
Aloes Socot.	ʒj.
Pulv. Zingib.	℥j.
Pulv. Curcumæ	℥j.
Mag. Sulph.	℥xij. M.

To be given in a quart of hot ale or thin gruel within two hours after calving.

Alternate ten-drop doses of tinctures of aconite and belladonna is the treatment adopted by some, and it is approved by the Imperial Live-stock Insurance Company in their printed recommendations to assurers.

Tonic Powder for Cattle.

Sodii Hyposulphit.	℥ss.
Potass. Nit.	℥ss.
Pulv. Zingib.	ʒiij.
Pulv. Nuc. Vom.	ʒj.
Pulv. Gentianæ	℥ss.

Fiat pulvis.

One twice a day in treacle and water, gruel, or old ale. Especially useful in debility in cows after calving, or where appetite is deficient, and after exposure of any kind, as at marts and fairs.

Cordial Drench.—For cows not chewing the cud properly or failing in milk, or bullocks off their feed or not thriving, the following is recommended :—

Pulv. Zingib.	℥j.
Pulv. Gentianæ	℥j.
Pulv. Carui	℥j.
Pulv. Fœnug.	℥j.
Pulv. Anisi	℥j.
Bol. Armen.	℥j.
Mag. Sulph.	℥viij. M.

To be given at night in a quart of hot ale or thin gruel.

Calves' Cordials and remedies for scour or skit are known to be of value in ordinary sporadic cases, or those not due to an infectious disease which has long ravaged certain districts in Ireland, and led to the employment of Professor Nocard by the Government to investigate the scourge. For such outbreaks the prescriber should rather advise sanitary measures than medicines for the victims. These are detailed in Leaflet No. 11, which the Secretary of the Board of Agriculture and Fisheries, 4 Whitehall Place, London, S.W., will supply in response to an unstamped letter requesting it to be forwarded to any address. Every reader should obtain this and assimilate its contents, if he would not be tripped up by some farmer who has already done so. Professor Nocard recommends the tying of the navel string, immediately the calf is dropped, with twine previously steeped in 1-in-40 solution of lysol. He further advises dressing the cord which remains attached to the calf with the following, using a brush :—

Iodi	gr. xxxv.
Potassii Iodidi	gr. lxx.
Aquæ	℥XL.

Solve.

With another brush the navel is to be dressed with the following :—

Iodi	gr. xxxv.
S.V.M.	Oij.

Solve.

After an interval for evaporation, a third dressing with collodion containing 1 per cent. of iodine is employed in the same way, and the calf set free upon a bed of clean straw. These preparations should certainly be supplied by the veterinary chemist, as well as the disinfectants for use in the buildings and upon the bearings of cows. We now give the older-fashioned and popular cures.

Calves' Cordials for Diarrhœa.

I.		II.	
Cretæ Præp.	℥j.	Tinct. Opii	ʒij.
Pulv. Catechu	℥ss.	Infus. Catechu	℥ij.
Pulv. Zingib.	ʒij.	Alum. Sulph.	ʒj.
Pulv. Opii	ʒss.	Infus. Quercûs ad	℥vj.
Aq. Menthæ Pip.	℥x. M.	M. ft. mist. $\frac{1}{6}$ pt. ter die.	

Dose of No. I. : One to three tablespoonfuls twice a day. For a pig give $\frac{1}{2}$ oz. to 1 oz. twice a day ; a teaspoonful will be enough for sucking pigs.

Tinct. Opii	ʒj.
Aq. Calcis	Oij.

M. ft. mist. Capt. ℥ij. bis vel ter die.

Astringent for Scours or Diarrhœa for a Horse or Bullock.

Alum Sulph.	℥ij.
Pulv. Catechu	℥j.
Pulv. Cort. Quercûs.	℥ij. oak [illegible]

Fiat pulvis.

To be given in gruel, and repeated if necessary.

For diarrhœa in foals a single ounce of laudanum is found to be very effective in Australia.

Dog Medicines.

Distemper Pills.

Pulv. Jacobi	gr. iiss.	Ext. Belladonnæ Sicc.	gr. j.
Hydrarg. c. Cretâ	gr. ij.	Potassii Sulphat.	gr. ij.
Pulv. Ipecac. Co.	gr. iij.	Hydrarg. Sulph. Nig.	gr. j.
Quininæ Sulph.	gr. iss.	Pulv. Antimonialis	gr. j.
Excipient. ad	gr. x.	Excipient. ad	gr. x.
M. ft. pil.		Fiat pil.	
		(Shipley.)	
Hydrarg. Sulph. Flav.	gr. ss.	Quininæ Sulph.	gr. j.
Gum. Galban.	gr. iij.	Pulv. Potass. Chlorat.	gr. ij.
Pulv. Jalapæ	gr. ij.	Sodii Bicarb.	gr. ij.
Excipient. ad	gr. x.	Excipient. ad	gr. x.
M. ft. pil.		Fiat pil.	

One to be given twice or three times a week.

Distemper Mixture.

Potassii Iodidi	gr. xij.
Chinosol	gr. vj.
Aquam ad	℥iss.

Ft. mist. Capt. ʒj. bis die.

Given in the early stages of distemper this mixture is believed to neutralise the toxin and eliminate the effete material which causes the secondary form of chorea.

A tablespoonful of the following thrice a day is also useful:—

Spt. Æther. Nit.	℥iss.
Sodii Hyposulph.	℥ss.
Aquam ad	℥vj. M.

Also syrup of buckthorn in 1-ounce doses. Many dogs which resist having medicine put down their throats will readily lap up a mixture of syrup of buckthorn and milk. Inoculation or injection of anti-distemper serum will in the future supersede all other forms of treatment.

Alterative Pills for Dogs.

Ext. Rhei	gr. ij.
Pulv. Aloes Barb.	gr. ss.
Flor. Sulph.	gr. iij.
Excipient. ad	gr. x.

M. ft. pil.

One pill three times a week in conjunction with skin lotions for eczema, etc.

Pulv. Aloes Barb.	gr. ij.
Podoph. Resinæ	gr. $\frac{1}{6}$
Ferri Carb. Rub.	gr. iij.
Sodii Bicarb.	gr. ij.
Pulv. Zingib.	gr. j.
Excipient. ad	gr. x.

Fiat pilula.

One, night and morning.

Condition Pills.

Hyd. c. Cretâ	gr. ij.
Aloes Barb.	gr. iv.
Pulv. Potass. Nit.	gr. j.
Pulv. Antim. Sulph.	gr. j.
Pulv. Capsici	gr. $\frac{1}{4}$
Ext. Gentian. ad	gr. x.

Fiat pilula.

One, night and morning.

Astringent Dog Pills.

Pulv. Opii	gr. $\frac{1}{4}$ ad $\frac{3}{4}$
Pulv. Alum.	gr. ij.
Pulv. Catechu	gr. ij.
Pulv. Amyli	gr. iv.
Excipient. ad	gr. x.

M. ft. pil.

One to be given twice a day.

Pulv. Opii	gr. j.
Pulv. Kino	gr. j.
Pulv. Catechu	gr. ij.
Pulv. Zingiber.	gr. iij.
Pulv. Acaciæ	gr. j.
Excipient. ad	gr. x.

Fiat pilula.

One or two occasionally.

Aperient Pills.

Pulv. Aloes Barb.	gr. viij.
Ol. Croton.	♏ss.

Fiat pilula.

Pulv. Aloes Barb.	gr. viij.
Hydrarg. Subchlor.	gr. ij.

Fiat pilula.

Purgative Pills for Dogs.

Pil. Hydrarg.	gr. iiss.
Ext. Colchici Acet.	gr. ¼
Ext. Hyoscyami	gr. j.
Ext. Coloc. Co.	gr. v.

M. ft. pil.

One for a dose occasionally.

Podophyllini	gr. j.
Aloini	gr. ij.
Pulv. Scammonii	gr. ss.
Pulv. Zingiber.	gr. j.
Ol. Menth. Pip.	gtt. j.
Excipient.	q.s.

Fiat pilula.

One or two according to the size of the dog.

Cough Pills for Dogs.

Pulv. Camphoræ	gr. ¼
Pulv. Ipecac. Co.	gr. iss.
Pulv. Scillæ	gr. iss.
Ext. Digitalis	gr. ⅛
Pulv. Gum. Ammoniac.	gr. ij.
Pulv. Digitalis	gr. ⅛
Excipient. q.s. ad	gr. x.

M. ft. pil. Capt. j. bis die.

Pulv. Digitalis	gr. ij.
Pulv. Antimonialis	gr. iv.
Pulv. Pot. Nit.	gr. iv.
Pulv. Ipecac. Co.	gr. ij.

Fiat pilula.

Sodii Bicarb.	gr. iij.
Ext. Bellad. Sicc.	gr. j.
Pulv. Camphoræ	gr. j.
Pulv. Digitalis	gr. ss.
Excipient. ad	gr. x.

Fiat pilula.

Tonic Dog Pills.

Ferri Carb. Sacch.	gr. ij.
Quininæ Sulph.	gr. ss.
Ext. Gentianæ	gr. ij.
Excipient. ad	gr. x.

M. ft. pil. j. omni die.

Quininæ Sulph.	gr. j.
Ferri Sulph. Exsic.	gr. iss.
Excipient. ad	gr. x.

Fiat pilula.

One, twice a day.

Dogs' Worm Pills.

Santonini	gr. ij.
Pulv. Vitrei	gr. iij.
Pulv. Arecæ	gr. xx.
Pulv. Jalapæ	gr. v.

M. ft. pil. Pro re natâ.

Santonini	gr. j.
Podophyllini	gr. ss.

Fiat pilula.

Worm medicines should be given on an empty stomach, and the dose of areca nut estimated on the scale of 2 grains to each pound weight of the dog. Some practitioners give an aperient dose of oil *first*, in order to pave the way for the anthelmintic substances ; some prefer jalap or other purgative *with* the vermifuge ; and others give a cathartic *afterwards*, to ensure emptying the canal of dead or dying worms.

Dogs' Little Pills.

Bulky pills are more easily handled and pushed over the tongues of most dogs, but the average pet-owner is unable to thrust a pill into an animal's mouth. For these, a series of little pills is here introduced. They can be inserted in a piece of meat or a chocolate cream, for ladies' dogs accustomed to such delicacies. The practice of guile, rather than force, commends itself to the feminine mind, and the 'little' pill acquires a sale not to be expected of the old-fashioned bolus.

Little Anticonstipation Pills.

Aloini, Podophyllini, et Ext. Bellad. Sicc. āā.	gr. $\frac{1}{8}$
Oleo-res. Capsici . .	gr. $\frac{1}{30}$

Fiat pilula.

Little Aperient Pills.

Podophyllini, Jalapini, et Aloini . . āā.	gr. $\frac{1}{10}$
Ext. Hyoscyami . .	gr. $\frac{1}{20}$
Oleo-res. Capsici . .	gr. $\frac{1}{20}$

Fiat pilula.

Little Cathartic Pills.

Aloini	gr. $\frac{1}{5}$
Jalapini	gr. $\frac{1}{5}$
Podophyllini . . .	gr. $\frac{1}{5}$
Ext. Hyoscyami . .	gr. $\frac{1}{10}$
Oleo-res. Capsici . .	gr. $\frac{1}{20}$

Fiat pilula.

Little Cough Pills.

I.

Morph. Hydrochlor. .	gr. $\frac{1}{50}$
Atropinæ Sulphat. . .	gr. $\frac{1}{150}$
Pulv. Scillæ . . .	gr. ss.
Pulv. Ipecac. . . .	gr. $\frac{1}{12}$
Ext. Conii . . .	gr. $\frac{1}{8}$

Fiat pilula.

II.

Pulv. Ipecac. . . .	gr. $\frac{1}{12}$
Pulv. Scillæ . . .	gr. ss.
Ext. Conii . . .	gr. $\frac{1}{8}$
Morph. Hydrochlor. .	gr. $\frac{1}{36}$

Fiat pilula.

Little Tonic Pills.

Quininæ Phosph. . .	gr. ss.
Ferri Phosphat. . .	gr. ss.

Fiat pilula.

For Chorea and Epilepsy.

Acid. Arseniosi	gr. $\frac{1}{36}$
Ferri Redacti	gr. j.

Fiat pilula.

Acid. Arseniosi	gr. $\frac{1}{36}$
Zinci Sulphat.	gr. ij.

For Eczema.

Arsenii Iodid.	gr. $\frac{1}{20}$, gr. $\frac{1}{10}$ in pilulâ

One to be given, as required, after food.

Arsenii Iodid.	gr. $\frac{1}{12}$
Hydrarg. Iodidi Rub.	gr. $\frac{1}{12}$

Fiat pilula.

One after the food.

Treatment of Warts.

Nothing in animal life is more remarkable than the sudden appearance and disappearance of warts of various kinds. Warts on animals vary from the size of a pin's head to many pounds in weight ; their appearance is often not noticed till they attain a great size, hence the belief in their mushroom-like growth. They may be found on every domestic animal at times, though they are not common to sheep and pigs.

Warts (*verrucæ*) are technically described as epidermic or epithelial tumours. They are made up of layers or scales, but often attain large proportions, and develop within themselves blood-vessels of considerable size. They may be roughly divided into three classes, requiring different treatment :—

1st. Those growing within a shell or cyst, like a nut, whose shell needs only to be laid open to release them. A sharp knife and a bold cut, followed by a squeeze, will make such encysted tumours or warts jump out clean.

2nd. Pediculated warts.—These may be any shape, but have a narrow neck or base, the attachment being the smallest part of the growth.

3rd. Spreading, or broad-based, warts, whose disposition is to coalesce and occupy a large surface, in contradistinction to the pediculated.

Scientific pathologists may object to this classification, but it will answer our purpose best.

Warts are found in all sorts of situations—in the mouth of the dog, on the teats of cows, the sheath of horses, the genitals of mares; on the face, eyelids, or other parts of the anatomy. They require somewhat different treatment according to situation.

The first variety require only the knife; the second can generally be got rid of with a tight ligature, but the place should, if situated about the body or limbs, be touched with a red-hot iron or one of the caustic lotions hereafter to be mentioned. Ointments are objectionable, as they afford by their greasiness a certain amount of protection where we want the most caustic effect.

In selecting a ligature the size of the wart should be taken into consideration. A small wart on a pug dog's eyelid, for instance, should be secured by fine but strong silk, while a large wart on a bullock or a horse may need a stout waxed end. When ligatures fail, it is usually because they 'give,' or are not at first tied tightly enough. Their effect may be greatly promoted by first wetting and dipping the hair, silk, cord, or waxed end in hyd. sulph. flav. or hyd. bichlor. pulv., or, if a plain piece of string is used, a little pulv. resinæ will help it to hold. There is nothing better for the purpose than broken fiddle-strings which have already been well stretched.

Many of the larger warts, and others that can be got at, are removed by the ecraseur, which prevents bleeding and saves a great deal of alarm at the loss of blood, even though it is small. They may or may not return—it is impossible to say with certainty.

The spreading, or broad-based, warts are the most difficult to eradicate, and have a knack of coming again in such abundance that the unfortunate owner is inclined to think wart-seed must have been sown on the last occasion of scarifying. If upon manipulation the warts are found to have no deep or firm hold, it will be better to secure the animal and dissect them out at once. A large wound need not be feared. The skin will stretch as much as is needful, and can be brought together over almost any wound.

It may be necessary to use a little tinct. ferri perchlor. as a styptic, but we should prefer zinci chlor. ʒj. in aq. ℥iv.

Warts of the broad-based kind that cannot be either ligatured or operated upon with the knife may be destroyed in various ways, and among the most successful remedies may be named acid. nitric. fort. and acid. sulph., but they are such dangerous agents in the hands of clumsy carters and cowmen and horny-handed labourers that we prefer such agents as will not destroy the skin if spattered upon another part. Hydrarg. sulph. flav., and even hyd. bichlor., in powder, are safer than acids, and effectual if the cowman or groom will thoroughly soak the wart in warm water, or soft soap and water, before applying the powder.

The truly marvellous manner in which warts come and go has already been referred to, but their cure by the application of warm blood was not at one time regarded with favour by scientific practitioners, as it was thought to belong to the category of charms, having no practical interest. The theory of infection where the blood of a wart runs over the adjacent skin, too, was tabooed by medical authorities, but it would seem, from correspondence in the *Field* and other journals, that both these popular notions are justified, if not absolutely proved, by trustworthy experiments. The treatment of the myriads of warts in dogs' mouths has also become practicable by painting the affected parts with a strong solution of salicylic acid. Evidence of a fairly reliable character is also to hand as to the curative effects of salicylic acid administered internally in the case of cattle having warts under the belly and other places where manual interference would be most difficult. A very effectual destroyer, in the hands of a careful person, is made of—

Acidi Arseniosi	℥j.
Saponis Mollis	℥j.

The alkali loosens the piled-up epithelium, and the arsenious acid destroys it.

There can be no more effectual lotion than—

Zinci Chloridi	ʒj.
Spt. Vini Rect.	℥j.

M. ft. lotio.

If this is applied daily after soaking the wart with warm water, the wart will very soon be destroyed, no matter how large.

Dogs are also the subject of pigmentary warts, or small tumours, which require much the same treatment, but rather more knife and stick chloride of zinc. Black-and-tan dogs and Yorkshire terriers, whose coats change colour with years, are the most frequent subjects.

Grey horses, especially dapples, are also subject to pigmentary tumours, which must not be too hastily assumed to be warts or treated as such, particularly if situated about the anus or vagina. These are usually malignant, and if removed tend to recur (melanosis).

Warts on the teats of cows are often very troublesome, and the milker's hand being applied twice daily makes it difficult to do anything till the cow is dry; but ligaturing one or two at a time may be tried by anyone with sufficient patience.

Good results have been obtained by daily dressing warts on teats with *Melbourne Collodion*, viz.:—

Acidi Salicylici	ʒj.
Collodii	ʒvij.

Misce et solve.

Many a bucketful of good milk has gone down the drains through the pain caused by warts, and they should be removed as soon as opportunity serves.

Foot Rot and its Treatment.

Every country chemist has a good recipe for foot-rot ointment, paste, or lotion, yet farmers are constantly complaining of their inefficiency, and writing to the agricultural papers for a good recipe. The reason is not far to seek. It consists in the perfunctory manner in which the curative agents are employed. We would therefore urge retailers to insist on the importance of paring away dead horn and clearing away all dirt and *débris*, and to make a personal appeal to purchasers to give the article sold a fair and proper trial. Conspicuous directions should be put on the package or vessel, and their importance emphasised.

Applications.

1. Equal parts of liq. antim. chlor. and tinct. myrrhæ.

2. Equal parts of sulphate of copper, gunpowder, and lard. *Finlay Dun.*

3. Sol. zinci chlorid. (Burnett's Fluid).

4. Acid. sulphuric. 1, ol. terebinth. 8.—*Hogg.*

5. Hydrargyri ʒij., acid. nitric. ℥ij., acid. hydrochlor. ℥j., acid. acetic. ℥j. To be diluted with from 4 to 12 parts of water as the case may seem to require.—*Brown.*

6. A mixture of sulphate of copper and Stockholm tar. *Fleming.*

Foot-rot Pastes.

Cupri Sulph.	℥iv.
Ferri Sesquioxid.	℥iv.
Acidi Acetici Glacial.	℥iij.
Glycerini	℥j.

Make a paste with linseed oil.

Alum. Exsicc.	℥ss.
Hydrarg. Perchlor.	gr. x.
Acidi Carbolici	ʒij.
Vaselini	℥vj.
Cretæ Præp.	℥ij.

Reduce the solids separately to powder, and mix with the vaseline in which the carbolic acid has previously been dissolved.

Adipis	℥iv.
Ol. Lini	℥ij.
Resinæ	℥j.
Ol. Terebinth.	℥j.
Pulv. Cupri Acetat.	℥iv.

Melt the lard, oil, and resin, and rub the verdigris smoothly in the turpentine. Mix. If too stiff, add more linseed oil.

Mange and its Treatment.

Mange in horses, cattle, and dogs results from the attack of minute acari, which cause much itching and heat, accompanied with scurfiness and baldness of the skin. The treatment consists, first in destroying the acari, and secondly in absolute cleanliness of the parts affected. No better preparation for horses or cattle will be found than the following, which may be applied twice a day for a short time, and afterwards once a day :—

Black Sulphur	4 oz.
Powdered White Hellebore	1 oz.
Turpentine	1 to 4 oz.
Linseed Oil to make	24 oz.

When a milder treatment is required, mercurial ointment or sulphur ointment, or a mixture of sulphur, tar, and linseed oil, may be tried. Another good formula is a mixture of 1 part each of commercial cresol, soft soap, and turpentine, with 17 parts rape or linseed oil.

Professor Simonds, formerly principal of the Royal Veterinary College, Camden Town, was very fond of prescribing the following, and the writer has used it for many years for dogs, though too vesicating for horses :—

Spirit of Tar	equal parts. Mix.
Spirit of Turpentine	
Seed Oil	

Two good dressings, with an interval of three days, will certainly destroy sarcoptic mange. The animal should afterwards be washed with a neutral soap and rinsed in a quart or two of warm water containing 5 per cent. of glycerin.

It happens sometimes with dog patients that they must be treated in the houses of their owners, and such an application as the last is not suitable for pets—or, rather, for the upholstery of the house. A fairly effectual lotion for such may be made as follows :—

Hydrarg. Perchlor.	ʒj.
Flor. Sulphuris	℥j.
Spt. Vini	℥j.
Aq. Calcis	℥xiij.

Boil the lime water and sulphur together; dissolve the mercuric chloride in the spirit, and add when cold.

There is another form of mange in dogs, known as follicular, and affecting a comparatively small area of skin. It usually begins on the withers or some spot along the back, very slowly invades the adjacent hair-glands, finding pasture only in those large ones from which grow the coarse hairs which dogs erect when angry. It may spread for a width of two fingers and extend from the top of the neck to the root of the tail. It seldom attracts attention until the parasite (*Demodex folliculorum*) has obtained a firm hold, and is scarcely ever entirely dislodged. The demodex itself can be killed with the tar and turpentine lotion already referred to, but the eggs remain and hatch about the month of July in the following year. The hair should be clipped, and two or three applications of the lotion made, then washed, as for sarcoptic mange ; but clients should be made to understand that mange will recur unless a bottle of the lotion is kept in stock and applied in the early months of summer, when a disposition to rub against the staves of chairs, etc., is first noticed.

Mange in the cat is due to *Sarcoptis cati.* It begins by the formation of a scab about the ears and over the head. The hair falls off, the skin is thickened, and the conjunctiva is often affected, the animal becoming blind.

None of the foregoing preparations is suitable for cats, for various reasons, chief among them being the extreme susceptibility of cats to terebinthinous applications. Carbolic acid should under no circumstances be prescribed for cats, and death has not infrequently been caused by applications of ordinary cresol emulsions. The following is a suitable dressing for mange in these animals :—

Chinosoli	ʒj.
Glycerini	ʒij.
Aquæ Dest.	℥xxv.

Misce et solve.

Peroxide of hydrogen is gaining favour in the treatment of mange and other skin-diseases in all animals.

A previous soaking with soapy water is necessary to remove the serosity in cases of any standing. For the ‘ common or garden' cat, not sharing my lady's boudoir, sulphur ointment does well enough, but the addition of a little alkanet and a few drops of eucalyptus will enhance its value in the eyes of most customers. If a large surface is affected it is advisable to destroy the animal. It is supposed that the cat is infected from mice and rabbits. In preparing sulphur remedies for external application use sulphur nigrum.

Mange in the camel and dromedary is due to *Sarcoptis dromedarii*: it spreads from camels to man. It should be treated in the same way as recommended for cattle.

Spring Medicines.

The advent of spring brings an increased demand for horse and cattle medicines, and it will be advantageous for the retailer to know the nature of the business he has to cope with. It is about this time that the horse changes his coat, and he feels the benefit of alterative powders, for which most country druggists have some cherished recipe. To those who have not we may say that those powders are most likely to ensure fame which contain remedies that act (1) on the skin in casting the old coat; (2) on the liver, clogged by months of 'hard' feeding without green meat; and (3) on the parasites which find a home in 50 per cent. of horses in town and country. For a powder that is safe and reliable in these various respects the following is an excellent combination. It should be given in the morning feed, either on damped corn and chaff or in a handful of bran mash :—

Alterative Powder.

Antim. Pot. Tart.	ʒss.
Ferri Sulph.	ʒj.
Hydrarg. c. Cretâ	gr. x.
Santonini	gr. x.
Sodii Chlorid.	ʒiv.
Pulv. Fœnug.	ʒij.
Pulv. Gent.	ʒij. M.

This is for a single dose. The mixture may be coloured with Armenian bole without making it unpalatable or interfering with its 'nose'; or yellow with turmeric.

An equally efficacious ball, for those who will pay the better price which balls command, can be made of ʒj. of aloes, and with cinchona instead of gentian; but balls containing aloes should only be given two or three times a week, for fear of causing nausea or purging.

It should be remembered that all worm-medicines are uncertain in their action, but the springtime favours the medicaments, as early green meat assists in the dislodgment of the enemy. Such stickers as bots may be prudently prescribed for in the early summer, as their time has then come, and many an old farrier's remedies enjoy their reputation through being recommended at the right season.

Carbon bisulphide is the most fashionable remedy for *bots in horses*, and it is given in doses of 60 minims in gelatin capsules: repeated in twelve hours, and followed by an aloetic ball. Iodine, copper salts, naphthol, and arsenic are also employed with more or less success—generally *less*.

Worm Balls.

Ferri Sulph.	ʒij.
Acid. Arsen.	gr. x.
Gum. Asafet.	ʒij.
Tereb. Venet.	q.s.

Ft. bol.

Cupri Sulph.	ʒij.
Sodii Chlor.	ʒiv.
Pulv. Calumbæ	ʒij.
Pulv. Zingib.	ʒij.
Ol. Filicis	q.s.

Ft. bol.

One of either of these balls may be given three nights a week. Modern veterinary writers speak of arsenic as dangerous, but it has not been proved so in practice, and many practitioners give a much larger dose than the above with excellent results. Comparatively small doses prove toxic on an empty stomach, while large doses are tolerated in a mass of ingesta. Tartar emetic in 1-dr. doses is considered one of the safest and most effectual vermifuges, and may be given without fear of ill-effects.

The spring sunshine brings out the lice upon cattle, for which the following is a cheap and efficient remedy : —

Lice Oils.

Paraffin.	℥j.	
Ol. Picis	℥j.	
Ol. Sesami	℥v.	M.

Any damaged or inferior fixed oil can be used for this application.

In coarse-bred horses *grease* has a tendency to break out in the spring, and for this complaint an effectual remedy yielding large profits may be found in the commercial sulphate of zinc. It should be rubbed down and tinted with a few drops of cochineal, which will not be enough to stain a white-legged horse. A 4-oz. packet is enough for a gallon of lotion. Balls should be given internally at the same time. Most country druggists have a good grease-ball recipe, and we may remind them that any lotion they may prescribe will be much aided by drachm doses internally of cupri sulphas, cupri acetas, zinci sulphas, or sulphur nig. Grease balls or powders should contain small doses of arsenious acid. Powders can be recommended where customers will not pay the price of balls or cannot administer them. Most horses will eat such unpalatable remedies as cupri and ferri sulph. pulv. if given with salt or fenugreek in a mash, or even on damped chaff or corn. Carters especially have a great preference for powders, though it necessarily limits the prescriber's choice of agents. Up to the end of April there is a demand for certain things, such as mixtures for straining in ewes, lambing oils, etc., and these should not be put out of sight. Scouring mixtures for calves are useful all the year round, and will keep, and as soon as the sale of these things is falling off retailers should be anticipating demand for fly-powders, sheep-dips, and remedies for scabs, maggots, wounds, and injuries. Cleansing drenches ought at all times to be in a position to catch the eye of the farmer or of his wife, who is very often both prescriber and dispenser of the remedies used for farm stock.

Black-leg, Quarter-ill, Struck, the Pook, etc.

Protective inoculation or immunisation by specially prepared vaccine is coming into vogue, and in Ireland especially thousands of young cattle are now saved every year that under the old conditions would undoubtedly have perished. The Irish Board of Agriculture has done much to stimulate interest in the treatment, and many chemists in Ireland, and in England also, do a large business in vaccinating cattle in those districts remote from the veterinary surgeon. Formerly the cord vaccine issued by the Pasteur Company was preferred, but this has largely given place to the little pillets of vaccine, ‘Blacklegoids,’ issued by Parke, Davis & Co., which are very reliable, and the following statement has been issued by the Board of Agriculture in regard to the remedy :—

> Calves should be inoculated when between five and twenty months old. Inoculation may be performed at all times of the year except in very hot or very cold weather. The Department recommend that inoculation should be done by a qualified veterinary surgeon, who will give all necessary advice ; and, in order that the cost may be reduced to a minimum, farmers should co-operate and bring their calves to some centre on a day previously arranged with him.

There is also a demand for other remedies, of which the following is typical :—

Black-leg Preventive Drench.

Sodii Hyposulph.	℥ij.
Aloes Capensis	ʒij.
Magnes. Sulph.	℥vj. M.

For one drink. To be given in a pint of warm water a day or two before turning out to pasture.

Double this quantity may be given to a full-sized bullock, but the dose indicated is for yearlings, since these are the most frequent subjects of the fatal malady.

Setoning is still largely practised in so-called ‘pooky’ districts, and a suitable dressing for inducing and maintaining suppuration in the dewlap (where the seton is inserted) may be made from ol. tereb. 1 part, and ol. anchusæ 2 parts.

Ringworm, White Flaw, etc.

This variously named trouble should be got rid of without delay, and the dresser should be advised not to break the scabs, lest he catch it. The white patches should be liberally anointed with any grease containing sulphur; here, again, is an opportunity to use up discoloured vaseline, rancid cold cream, or aught else in the way of grease, since it is only a vehicle, and of no therapeutic importance. Such preparations should be coloured and 'nosed,' and, we need hardly say, made the same to the eye from year to year. The following is a useful formula :—

Ringworm Ointment.

Sulph. Nig.	℥j.	
Bol. Armen.	℥j.	
Adipis	℥x.	
Creosoti	q.s.	M.

Any essential oil which has gone wrong may be used, but creosote is not only powerful to mask rancidity, but is an active insecticide in itself. Other efficacious ointments are :—

Creosoti . . .	℥j.	
Potass. Carb. . .	℥j.	
Sulphur. Nig. . .	ʒij.	
Ol. Cetacei . .	℥iv.	
Adipis . . .	℥viij.	M.

Jeyes' Fluid . . .	1 oz.
Black Sulphur . . .	1 oz.
Lard	6 oz.
Mix.	

Ung. potassæ sulphuratæ (1 in 16) is also a good remedy.

Ringworm patches should not be scraped with the fingernails, or by other means, as cases have occurred in which the person so doing has contracted ringworm and suffered very severe consequences. The white patches should be washed with soap and soda solution, scraped with a piece of glass or a blunt knife, and the ointment or liniment then applied.

It not unfrequently happens that some very good liniment or embrocation is used by coachmen or others for the wrong purpose, so that the skin of a horse's leg is blistered and 'filling' of the limb follows. Simple sprains and injuries are much better treated with an evaporating lotion, which is also a rapid means of undoing the mischief of these embrocations, whose active ingredients consist of turpentine, ammonia, etc. A suitable remedy for all kinds of sprains, injuries, swellings, etc., of the limbs of horses or cattle is the following :—

Sedative Lotion.

Ammon. Mur.	℥ij.	
Acid. Acetic.	℥j.	
Pot. Nit.	ʒiv.	
Spt. Vini Rect.	℥ij.	
Aq. ad	Oj.	M.

This is a concentrated lotion, which must be mixed with a gallon of rain-water, and applied on wet bandages, or sponged on to the injured parts and allowed to dry. There is no season of the year when this may not be sold, if kept in stock and recommended, when less suitable but more widely known goods are asked for. Tr. opii may be added to it if pain is severe or excessive.

The virtues of nitre as a lotion are not sufficiently well known. An ounce in half a gallon of water, *plus* colouring, makes a splendid cooling lotion, and the cost is certainly not prohibitive. If to be used on a recently abraded surface, 5 per cent. of glycerin may be added without impairing its usefulness.

Another valuable and much-overlooked application is *carbolised oil*, 1 in 15 or 30. This, coloured with either ol. viride or alkanet, will make for itself a demand if sold during the shearing season as wound oil. Any cheap oil may be used as a solvent of the acid.

Flies.

An Ointment for the Destruction of Warbles in the backs of bullocks would sell well in the summer if conspicuously labelled. The late Miss Ormerod succeeded in calling the world's attention to the loss sustained through these pests, though veterinary writers had shouted in vain for a century to the same effect. Ung. hydrarg. rubbed into the tumour is a safe and effectual remedy, and chemists and druggists might exterminate warbles, as well as bots, if they would more persistently call the attention of farmers to the remedies that will prevent the propagation of the pest. The most recent investigations show that the fly strikes the lower part of the legs of the cattle, depositing the ova, which are licked off by the animals. The ova are hatched in the throat, and the larvæ find their way through the tissues to the shoulders. It is recommended to apply a tarry dressing to the legs, so as to prevent the fly striking there. Should the larvæ reach the shoulder, if mercurial or other ointment (*e.g.*, ung. picis co.) is rubbed into the orifice in the skin, the warbles can be killed and squeezed out before the skin is seriously damaged, and the pelt will not be permanently injured, there being time enough for repairs to be effected before turning out to grass again or bringing to the block in the case of fat cattle.

Fly on Horses.—An application much in demand is a cheap and colourless one for keeping flies from settling on horses. The worst of horse accidents occur from the annoyance that flies cause. There is a fortune in a really efficient, cheap, and easily applied remedy that may be used over the face without fear of injuring the eyes. Various things have been tried, such as walnut-leaves infused, weak preparations of creosote, Jeyes' fluid, etc., but they soon dry, and fail to afford assistance. As good an application as any is ordinary paraffin oil (1 pint) emulsified with soft soap (1¼ lb.) and water (2 gallons). Dissolve the soap in half the water (rain-water preferably), and with this mix the paraffin oil ; then add the rest of the water. This mixture bears further dilution. It should be sponged over the animal's body.

Sheep-dips.

In the chapter on Diseases of Sheep we deal fully with the treatment of the various diseases of the skin which affect sheep. Here it will be well to give some attention to the business side of the matter, for it is a most important one to the country chemist. To enumerate the various insecticides which have from time to time been used as a means of cleansing the fleeces of sheep and freeing them from parasites would be simply to make a list of all poisonous substances generally known. Many old remedies are no longer used, and those that are most employed comprise only a small list of poisons, chief of which is arsenic. In some form or other this is the principal ingredient in 'poisonous' dips.

Among the so-called 'non-poisonous' ones, carbolic acid or cresol is, with perhaps the exception of tobacco, or in some rare cases stavesacre, the main ingredient, under whatever name it is placed upon the market. We propose here to give a few formulæ for the preparation of both varieties.

Of the arsenical variety of dips the following will be found useful and comparatively cheap, and it has the merit of being easily prepared and put up for sale without any elaborate plant :—

Arsenious Acid	℥xij.
Dried Sodium Carbonate . .	℥xij.
Sulphur	℥iv.

Mix.

This quantity in packets can easily be retailed at from 8*d.* to 1*s.*, and is sufficient for twenty-five to thirty sheep, first dissolving in a few gallons of boiling water, and then adding more water to make 30 gallons, to which may be added a few pounds of soft soap if desired. The powder may also be mixed with the soap and sold as a paste dip, when of course the price would be enhanced. Where the price obtainable is not prohibitive, the substitution of potass. carb. for soda is an advantage, but a little more care is then necessary in the packing to ensure that no deliquescence takes place.

Another and favourite form of arsenical dip is made by substituting yellow arsenious sulphide in place of arsenious acid, this forming the 'yellow dips' for which so much is claimed. It is used in the same way and in the same proportions as the first-mentioned variety, while the cost is practically the same.

It is claimed for dips of this class that they not only kill all parasites infesting the sheep, as well as the eggs, but are a sure preventive of the 'fly' striking. This claim cannot be sustained. Flockmasters should be supplied with the fly-powder for which a recipe is given in the formulæ chapter. Dips of the class above mentioned are improved in respect of repelling the fly by the addition of 1 or 2 pints of crude cresol to each 50 gallons of dip. In favourable dry seasons the cresol helps to keep off this pest considerably.

Of the many kinds of so-called non-poisonous dips carbolic acid or phenol in some form is the principal ingredient, and is no doubt a good effective dip. It may be compounded either in the form of a fluid or a paste, the first kind of which is effectively represented by any of the 'soluble cresols' purchasable at, say, about 1*s.* 6*d.* per gallon, retailing at from 2*s.* 6*d.* to 3*s.* 6*d.*—this quantity being sufficient, with 50 gallons of water, for fifty sheep. It compares favourably as to price with the arsenical kind.

The paste dips of this class contain, as a rule, from 10 to 25 per cent. of crude carbolic soap, and of the paste about 10 lbs., dissolved in about 40 to 50 gallons of water, is the usual quantity for fifty sheep. It may be noted here that while a certain proportion of soap is useful, too much tends to render the fleece somewhat hard and harsh, thus reducing its market value to some extent, which must be guarded against. Sometimes in place of soap the acid is mixed with a common quality of glycerin, forming what is known as a glycerin dip.* This is undoubtedly a useful preparation when the acid is in the proportion of not less than 1 to 2 of glycerin, of which 12 lbs. would be the quantity for about fifty sheep, in the same amount of water as for the others. In place of carbolic acid, 'tar oil' is sometimes used, but is not to be recommended, as, although an effective parasiticide, curing mange and 'scab,' it has the disadvantage of not mixing well with water or the other ingredients of the dip, and tends to discolour the wool.

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* Glycerin dips have fallen out of favour on account of the attractiveness to fly of the glycerin which remains on the fleece when the sheep have become dry again. Mr. Hollings, of Bradford, who may be said to represent wool-staplers, has stated that no dips are satisfactory. All injure the staple, and an article which would serve the purpose of destroying parasites without impairment of the fleece would bring an early fortune to the manufacturer. Young chemists, please note.

Stavesacre-seed in the proportion of 1 to 30 of water, boiling for an hour or more, to which sulphur may be added, is also a useful preparation, although too strong solutions tend to cause nausea and prostration.

Tobacco is another favourite in some districts, and as the duty-free article is obtainable, it makes a cheap and good dip. The following is a reliable formula for ordinary purposes :—

Unmanufactured Tobacco . .	1 lb.
Carbonate of Potash . . .	1 lb.
Sulphur	1 lb.
Soft Soap	1 lb.

Boil for an hour in a few gallons of water, and then make up to 20 to 40 gallons, which is sufficient for about forty sheep or fifty lambs.

Nicotine-dips are now displacing those made straight from tobacco. Interesting information as to the conditions which must be fulfilled in getting the material duty free will be found in *The Chemist and Druggist*, 1907, ii., 723 and 935.

A Departmental Committee was appointed by the Board of Agriculture in 1903 to investigate experimentally and to report upon certain questions connected with the dipping and treatment of sheep. The Committee examined thirty-one witnesses, and in addition a series of experiments was carried out at the Agricultural Department of the University College of North Wales. The report of the Committee was published in August 1904, and is obtainable through booksellers. The Committee found that lice, although harmful to the health of sheep, can be readily dealt with by any effective dip ; the same may be said of ticks, keds, and sheep-scab—in fact, with some exceptions, the efficacy of sheep-dips for the purposes for which they are sold was confirmed by this inquiry. Maggots in sheep are best destroyed by carbolic dips, but sulphur is a perfect preventive. Professor Winter tried the effects of fifteen types of dip, the wool of the sheep being afterwards valued at the Bradford Conditioning House. The kinds of dip used were :—

1. Arsenic and washing-soda (2½ lbs. arsenic and 1¾ lb. washing-soda per 100 gals.).
2. Arsenic and caustic soda (½ lb. caustic soda in place of the washing-soda).
3. Arsenic, washing-soda, and sulphur (4 to 8 lbs. sulphur to No. 1).
4. Arsenic and sulphur (5 lbs. free sulphur per 100 gals.).
5. Sodium compounds of sulphur and free sulphur.
6. Calcium sulphide, as used in New Zealand (sulphur 25 lbs., slaked lime 12½ lbs., water 100 gals.).
7. Carbolic acid (1½ or ¾ gal. of carbolic acid and 5 lbs. of soft soap per 100 gals.).
8. Tar acid and arsenic (a mixture of Nos. 1 and 7).
9. Tar acid and other tar-products.
10. Pitch oil (with soft soap and whale oil).
11. Spirit of tar (1¼ per cent. of spirit of tar and ¼ per cent. of soap).
12. Tar acid and paraffin (tar acid 29, paraffin 36, lanoline 8, anhydrous soft soap 17½, water 9½. One gal. of this to 100 gals. of water).
13. Tobacco and sulphur (35 lbs. of tobacco and 10 lbs. of sulphur in 100 gals.).
14. Tobacco, sulphur, and tar acid.
15. Tobacco and sulphur ('the characteristic principle of tobacco' mixed with soft soap and sulphur).

Nos. 1 to 8 and 13 to 15 were found to give the most saleable wool (100 p.c.), Nos. 9 and 10 came next (95 p.c.), and Nos. 11 and 12 were third (90 p.c.).

Approved Sheep-dips.—To obtain the approval of the Board of Agriculture and Fisheries for a proprietary dip, the manufacturer must apply to the Board, 4 Whitehall Place, London, S.W., for a form entitled 'Application to the Board for Approval of a Sheep-dip for Sheep-scab.' Upon this information as to the nature and composition of the dip, preparation for use, and evidence as to its effectiveness has to be given. The application must be accompanied by not less than 2 lbs. or a pint of the dip.

DISEASES OF THE HORSE

Gripes, or Colic.—Perhaps the most common acute disease horses are subject to is colic or 'gripes.' The term is used very vaguely, being applied to nearly every case of abdominal pain, from indigestion up to inflammation of the bowels (*peritonitis*).

Most stablemen recognise abdominal pain, and the majority have strong opinions of their own as to the seat of disorder, if they do not know of a nostrum or certain cure. It is almost unnecessary to say that these opinions are not formed on any knowledge of the subject, nor indeed on experience; for when a horse dies he is seldom seen open by the attendant groom or carter, and the cause of death is not always to be easily discerned by a person unfamiliar with the natural condition and appearance of the viscera. It is very misleading to the intending prescriber, unless he be an old practitioner, to be told positively that the patient is suffering from kidney disease when all the symptoms are obscure, and he would be glad to learn the true history of the case. He cannot ask the patient, and if he listens to the attendant he is more likely to be led astray than if he concentrates his attention on the symptoms, and finds out by careful examination what were the special characteristics of a former attack, if the groom is very positive of what is the matter. Information of this kind cannot be obtained from an ignorant man who has been flatly contradicted at the outset, and it is always better to let the attendant do the talking and never be in a hurry to give a decided opinion. A case of gripes may turn out to be anything, from a ruptured liver to a simple bellyache. The indications of pain in the viscera are very much alike, and after attempting a general description of the horse's behaviour under such circumstances we may endeavour to differentiate between the causes, and to suggest the most likely treatment to be successful.

Horses are more likely to be attacked by colic or gripes after work than during or previous to it, and more frequently in hot than in cold weather.

A copious draught of cold water given to a horse when he comes in from exhausting labour is a frequent source of colic, but provided the water is at something like the temperature of the air, there is no objection to a heated animal drinking any reasonable quantity. His blood-vessels are thus rapidly replenished, and the water acts as a restorative, refreshing him generally, and preparing his stomach for digestion. Because drinking spring or well water (generally very cold) is a source of gripes, it was formerly thought that horses should not be allowed to satisfy their thirst when heated, and until recent years the opinion was quite generally endorsed by veterinary surgeons. It has now been conclusively proved that watering before feeding is best, unless the water is very cold. There has been a reduction in the number of colic cases in the Army and the great carrying studs since the latter practice has been adopted. Gripes or colic may arise from exhaustion, long fasting, and hereditary predisposition, associated with a particular conformation in which there is too much space between the last rib and the hip. These are called 'washy' horses, and are liable to a variety of digestive troubles, conspicuous among them being colic of either the spasmodic or the flatulent variety.

If a horse is attacked on coming in from work, the first symptom which the groom notices is that he does not want his food. Presently he begins to scrape the ground with his front foot, perhaps one, perhaps the other, whisks his tail, stamps with his feet, looks round towards his belly, frequently attempts to make water, appears excited, then dull and listless, scrapes again, brings all four feet close together, and if not racked up will go down after several feints at doing so.

Now he will roll on his back, groan and sweat, and as suddenly get up again in an interval of respite, and perhaps begin his meal ; another paroxysm of pain ensues, and the same process is repeated—this is a typical case of gripes or spasmodic colic. If a gripe draught or 'drink,' as it is commonly called, be administered, he probably recovers in an hour or two. The real condition in his case was spasm of the muscular coat of the intestines—extremely painful, as the agonised expression of the horse testifies, but leaving no ill-effects if the diffusible stimulants employed were of a proper kind. Before prescribing, it should be ascertained if anything has already been given, as

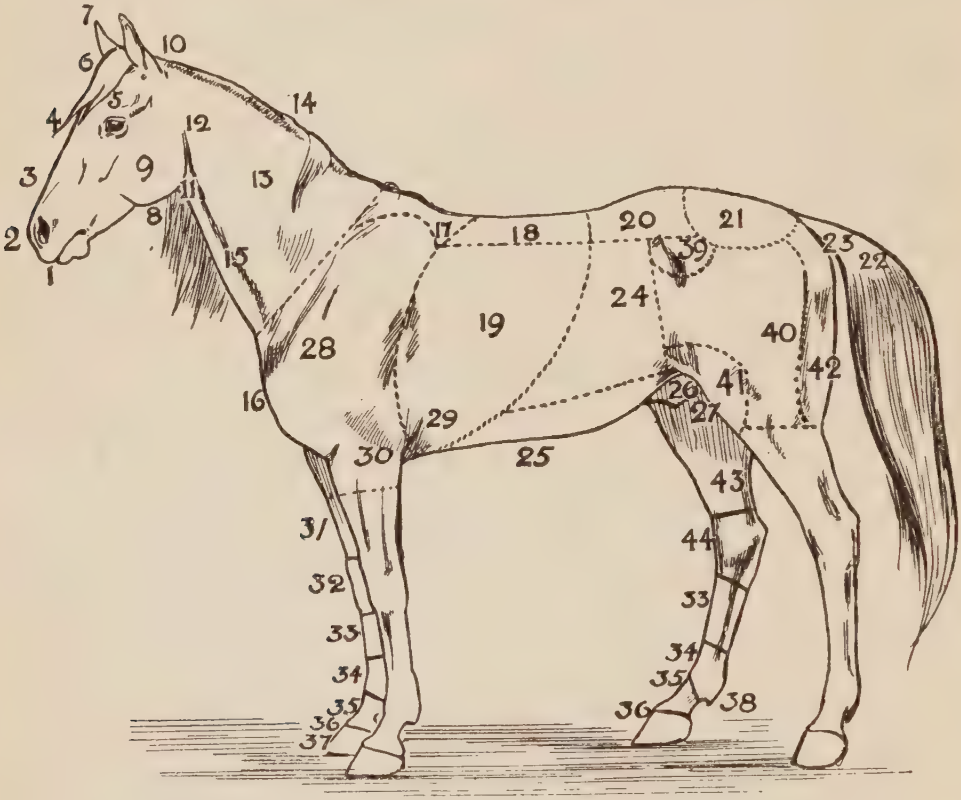

Fig. 6.

1, Lips ; 2, nostrils ; 3, face ; 4, brow ; 5, hollows over the eyes ; 6, foretop ; 7, ears ; 8, lower jaw ; 9, cheek ; 10, poll ; 11, throat ; 12, parotid gland ; 13, neck bones ; 14, crest ; 15, gullet ; 16, chest ; 17, withers ; 18, back ; 19, ribs ; 20, loins ; 21, croup ; 22, tail ; 23, anus ; 24, flank ; 25, belly ; 26, sheath ; 27, testicles ; 28, shoulder and arm ; 29, elbow ; 30, fore-arm ; 31, caston ; 32, knee ; 33, canon ; 34, fetlock ; 35, pastern ; 36, coronet ; 37, foot ; 38, tuft of fetlock ; 39, haunch ; 40, thigh ; 41, stifle ; 42, buttock ; 43, leg ; 44, hock.

upon the answer depends the modification or alteration of your dose. If the groom has introduced tobacco into the 'sheath,' or 'figged' the animal, the plug should be removed. In ninety-nine cases out of a hundred the attendant is positive that it is 'his water' that is wrong, and backs up his assertion by reference to someone who has seen him pass thick urine.

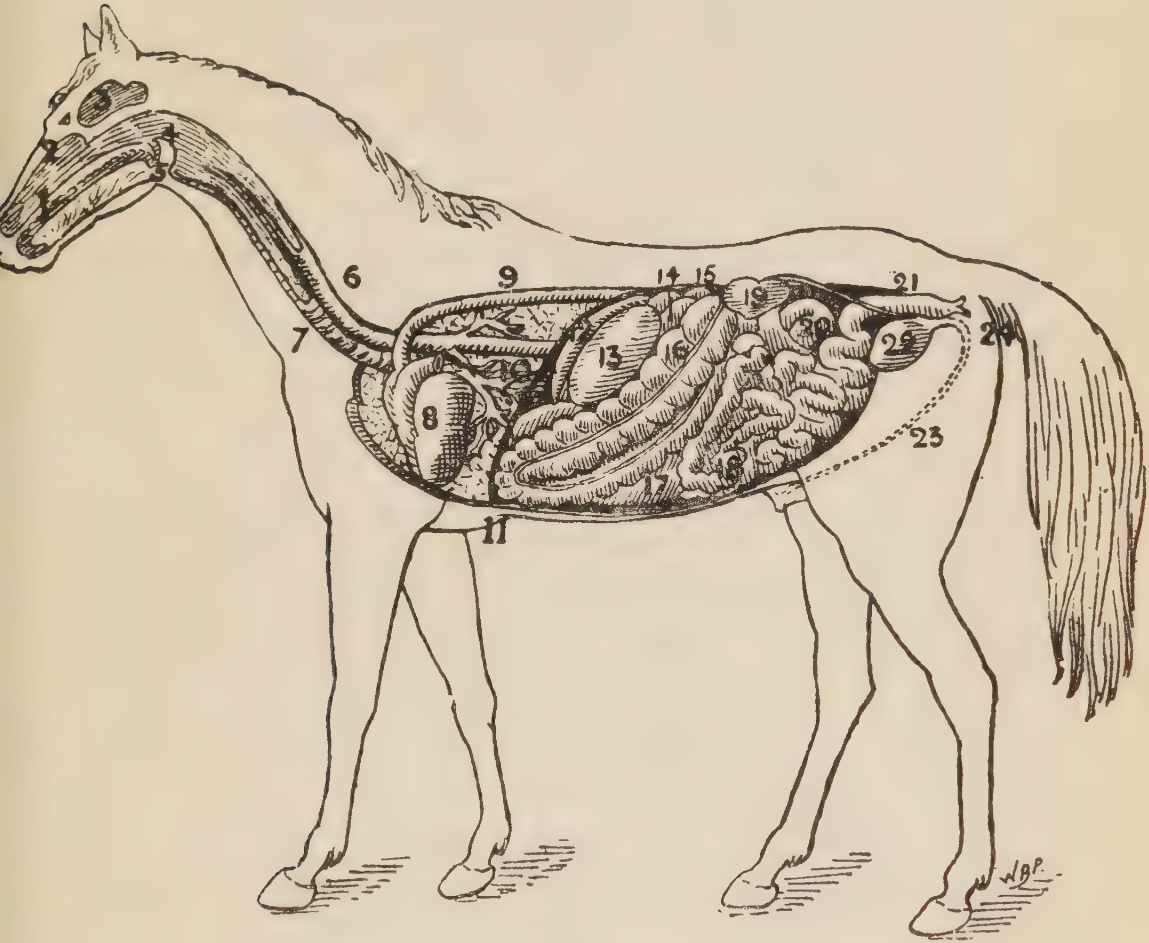

FIG. 7.

1, Mouth ; 2, nasal cavity ; [illegible], cranial cavity ; 4, pharynx ; 5, epiglottis ; 6, œsophagus, or gullet ; 7, windpipe ; 8, heart ; 9, the great abdominal artery ; 10, lungs ; 11, diaphragm ; 12, spleen ; 13, stomach ; 14, arterial branches to supply viscera ; 15, liver ; 16, the great colon ; 17, cæcum ; 18, small intestines ; 19, left kidney ; 20, floating intestine ; 21, rectum ; 22, bladder ; 23, urethra ; 24, anus.

To those not acquainted with stable nomenclature, we should explain that 'figging' is the insertion of a piece of chewed ginger into the rectum ; in this case as a remedial agent, though more often used by horse-copers to make a sluggish old horse look and behave in a lively and youthful manner at a fair or sale-yard. Of course no good can come from such a remedy, any more than from the insertion of the tobacco in the animal's sheath, and lovers of horses ought to know that 'figging' is a punishable offence, and lose no opportunity of denouncing it. It may also be stated that horses in perfect health, and of both sexes, frequently pass thick urine, and they are much more likely to be ill when it is colourless than when it is occasionally thick.

In some districts it is common among stablemen and others to give as much as a quarter of a pint of turpentine before seeking professional assistance. This we consider a dangerous quantity. The following draught may be safely supplied :—

Ol. Terebinth.	℥j.	
Ol. Lini	℥iv.	
Spt. Æth. Nit.	℥j.	M.

Turpentine soon acts upon the kidneys, and thus urged an animal will frequently empty its bladder, though the colic remains uncured ; hence, strange to say, numbers of people believe that when a horse has colic 'his water is wrong,' the action of the turpentine is misinterpreted, and the medicine is thought wonderful. Relaxation of the spasm (with or without treatment) is followed by urination, and *effect* is, therefore, mistaken for *cause*.

The following is also a good draught :—

Æther. Rect.	℥ss.	
Tinct. Opii	ʒvj.	
Ol. Tereb.	℥j.	
Tinct. Asafet.	ʒiv.	
Ol. Lini ad	Oss.	M.

This may be repeated in an hour, if necessary. Considerable benefit is often derived from the following draught, which is the one commonly relied upon by many veterinary surgeons :—

Spt. Æth. Nit.	℥j.	
Tinct. Opii	℥j.	
Ol. Lini	Oss.	M.

A good colic draught kept in stock by most modern vets. is composed as follows :—

Tinct. Chloroformi et Morphinæ	ʒiv.
Spt. Æther. Nit.	℥j.
Aquam ad	℥viij. M.

This draught may be repeated in two hours if acute pain continues; but no more imitation chlorodyne should be given without professional advice.

The injection of a pint or two of hot water per rectum is of the utmost service in a case of this kind, but the dung should be first removed from the rectum by introducing the hand as far as the arm can reach. Some little resistance is offered by the sphincter ani, but it is easily overcome by introducing two or three fingers first, and the hand and arm should be well greased for the convenience both of the operator and of the subject. Not a very pleasant operation; but the man who objects to do it is not fit for a horse-doctor, however well versed in the art of curative medicine. The water used for injection should not be hotter than the groom can bear to put his naked elbow in. This is a fair test for poultices also, the horny hand of the stableman being insensitive to temperatures which might injure either the mucous membrane or the skin of a horse's heel. Injections should not be forced into the bowel, but only gently introduced, for force distends the rectum, and when this force is removed, the gut, like all hollow muscular organs, contracts and expels its contents—an event to be avoided. The longer in reason an injection is retained the better; its immediate and forcible ejection is an occurrence of bad omen. Injections of oil or glycerin frequently relieve colic, as also suppositories of morphine, with or without atropine.

It is not every case of spasmodic colic which terminates in the happy recovery of the animal in a few hours, and a number of valuable horses die every week of this complaint or the diseases associated with it. Death does not occur, strictly speaking, from colic alone; colic is only a symptom. Death is due to rupture, inflammation, or other causes. The presence of colic cannot therefore be considered a light matter, and the professional attendant should not be too sanguine of recovery notwithstanding intervals of ease which lead the uninitiated to suppose the difficulty is at an end. The sequelæ to be feared in spasmodic colic are intussusception and strangulated hernia (commonly called twisted gut, or gut-tie), the result of the muscular spasm before referred to.

A fatal result may generally be expected, though it is supposed by some good authorities on the subject that both these conditions are occasionally remedied by the relaxation of the spasm. As we can only *see* those cases which prove fatal, it will probably remain a matter of conjecture to the end of time. We know, of course, that human subjects have been successfully operated upon, but horses are not only difficult patients to manage, but much more susceptible to peritonitis, and cannot be persuaded to lie on their backs with surgical appliances for days, and be fed with a spoon. Veterinary surgeons have lately been operating in abdominal cases, but without much success, one of the great drawbacks being the difficulty in arriving at a correct diagnosis in such cases before fatal symptoms set in.

It is a tradition of the stable that when a horse is attacked with gripes he should not be allowed to lie down, but constantly walked about, and the origin of this is an idea that rolling is the cause of twisted gut ; we do not agree with this, but consider a good bed of straw and liberty to seek an easy posture much more conducive to recovery, and if movement of the intestines could be caused by rolling, a gut already twisted might be untwisted in the act ; therefore, if a loosebox is not available, put the animal into a paddock and let him have a roll for half an hour. There is, however, very little doubt that irregular spasmodic contractions of the muscular layers of the intestine are the cause of both the conditions we have been considering.

For other cases, *see* Flatulent Colic, which has many more causes and requires different treatment. It is important to distinguish at the outset which of these forms has to be dealt with.

Flatulent Colic.—Under 'Gripes,' we have treated of cases of spasmodic colic or that form of gripes which is caused by sudden muscular contraction of the bowel.

There are many other causes, besides drinking cold water when the animal is hot, which induce gripes; but flatulent colic is not so often traceable to an immediate and exciting cause as to such chronic reasons as indigestion, improper food, over-feeding, long spells of idleness, and fast driving on a full stomach; windsuckers, cribbers, and weavers are the most frequent subjects, though any horse is liable to it. In some it is hereditary, as in man, and *post-mortem* examination does not show any anatomical peculiarity. A knowledge of the fact that it is hereditary should be, but often is not, sufficient to prevent an owner from breeding from a colicky mare. We have known several apparently valuable colts, bred from the same mare, but by different sires, to die of colic without any exciting cause, and before they had ever looked through a collar; the man, therefore, who breeds from a flatulent mare is courting disaster.

Indigestion in one or other of its many forms, and they are legion, is the chief cause of flatulent colic; but worms, intestinal calculi, dung-balls, and other bodies not carried on by the ordinary peristaltic action, may result in colic; or too much green food, especially if allowed to remain in a heap for some time before it is eaten. It is customary, in the early summer months, to supply horses with rye and vetches or other green stuff which has been cut early in the morning with a heavy dew or rain upon it, and in which, consequently, fermentation has been so quickly established that by the time it is delivered in town stables it is found quite hot upon thrusting the hand into the centre of the bundle. This kind of food is devoured with avidity by stall-fed horses accustomed to dry, hard food for many months at a time, and the consequence is an accumulation in the intestines, fermentation, and elimination of large volumes of carbonic-acid gas and sulphuretted hydrogen. The symptoms resemble those of spasmodic colic: the horse paws, scrapes the ground, strikes at his belly with the hind feet, groans, rolls, sweats, and trembles. If he breaks wind to a great extent, he seems, and doubtless is, relieved by the expulsion of so much gas ; but he is under a difficulty that neither man nor ruminants know—namely, he cannot eructate, save to a very limited extent. It is otherwise with the cow ; besides all the differences in her digestive organs, she is able to get rid of a vast quantity of gas upwards. You have only to punch one in the belly to discover this, and many cows eructate with no greater provocation than being looked at by a stranger.

The pulse in flatulent colic, as in the spasmodic form, is not sufficiently altered at first to be much guide, but it should be noted in order to compare it with some other bowel complaints in which it is an important indicator. There is one marked symptom which will enable the beginner to distinguish flatulent colic, and that is the drum-like condition of the belly. It is probable that the attendant will have already noticed that, but the veterinary adviser should in any case of colic take notice if the usual depression between the hip and ribs is at all filled up, and whether it sounds drum-like upon being lightly struck. If the case is somewhat advanced and other remedies have already been tried, if the pulse is small and weak and evidence of extreme prostration is present, indicated by cold ears and legs, a bad end may be anticipated, and such a case should not be undertaken by any but a qualified veterinary surgeon, if one is obtainable. When there is extreme distension (tympanites) a trocar and cannula are sometimes used to puncture the bowel ; but this operation requires an intimate acquaintance with anatomy, and is usually a *dernier ressort* ot the surgeon. Assuming that the prescriber is called in reasonable time, we would advise a mixture of such remedies as will produce a rapid distribution of nerve-force—that nerve-force which controls the calibre of blood-vessels and directs the operations of the bowels which are not voluntary—and such agents as will form new combinations with the gases, which, we have already said, are chiefly carbonic acid and sulphuretted hydrogen. Ammonia suggests itself at once as most likely to have this effect, and given in large doses, much diluted and often repeated, is frequently marvellous in its reduction of the tympany. As the disease often arises from retained and partially digested food, experience has long since induced farriers to give an aperient with, at any rate, the first dose, and although this practice is questionable on strictly scientific principles, we are in this instance disposed to think the old rule-of-thumbers are right.

The following for a first dose is excellent:—

Spt. Ammon. Arom.	℥j.
Ext. Aloes Barb.	ʒiv.
Tinct. Opii	ʒvj.
Spt. Æth. Nit.	℥j.
Tinct. Aconiti (B.P.)	♏xx.
Inf. Zingib. (1 in 10) ad	℥xv.

M. ft. haust.

Fleming's aconite is much used in veterinary practice, but in this work the B.P. preparations are adhered to as much as possible, for the sake of convenience and uniformity. The following is also worth trial:—

Spt. Ammon. Arom.	℥j.
Tinct. Asafetid.	℥j.
Ol. Terebinthinæ	℥j.
Ol. Lini ad	℥xv.

M. ft. haust.

Frequent doses of hyposulphite of soda have been found of great benefit in flatulent colic, and, with the addition of nux vomica, occasionally act like a charm. Essence of peppermint is also useful. As a *Colic-ball* the following has been remarkably successful:—

Pulv. Piper. Nig.	℥ss.
Pulv. Opii	ʒss.
Ol. Crotonis	♏x.–♏xx.
Glucosi	q.s. M.

A stimulating application all over the belly is helpful by exciting the peripheries of the nerves, and no doubt this is the cause of the benefit derived from the application of topical remedies for affections seated in parts which would seem too remote to be benefited. Elliman's Embrocation or white oils serve for this purpose, but the following is specially adapted for the cases now under consideration:—

Lin. Camph. Co.	℥j.
Ol. Origani	ʒj.
Lin. Saponis	℥vj.
Tinct. Opii	℥j. M.

If the horse is not improving in an hour from the first dose, either of the following may be given every hour:—

Spt. Ammon. Arom.	℥j.
Æther. Rect.	ʒiv.
Tinct. Opii	ʒiv.
Aq. ad	℥xv.

M. ft. haust.

Tinct. Chlorof. et Morph.	ʒij.
Ol. Terebinth.	℥j.
Ol. Lini	℥viij.

M. ft. haust.

The addition of creolin ʒss. to any draught has a wonderful effective in reducing the tympanites and stopping fermentation. A hypodermic injection of one or two grains of arecoline is excellent. A favourite 'bush' remedy for flatulent colic is to rub the inner thighs with turpentine and let the animal loose in a good big paddock. The exercise which the sufferer gives himself is sometimes sufficient to relieve him.

Constipation.—All domesticated animals are liable to constipation, and wild ones are not wholly exempt from it, though the instinct of the wild beast leads it to eat laxative food, while animals which have been domesticated for generations lose this among other instincts of self-preservation; besides which horses and cattle, if not dogs and cats, have no opportunity of selecting the herbs necessary for medicinal purposes. The stabled horse and the stalled ox eat what is given them so long as they continue to be well, and it is frequently only by their refusal of food that the attendant becomes aware of anything amiss. Diarrhœa is often seen before constipation. A good stableman will not think it beneath his dignity to note day by day the character of the fæces he removes from the stall, and many a fastidious horse-owner has lost a valuable animal through failing to observe these things for himself.

Constipation in the horse may be said to be always dangerous; unlike the ox and the dog, he cannot retain a lot of ingesta for any length of time without grave results. The first and earliest symptoms of constipation in a horse are straining and groaning or grunting in the act of defæcation, arching of the back, etc. The dung when examined will be found to consist of very small balls, more or less glazed and hard; this is the time for a copious bran mash or a small dose of linseed oil. The following is a suitable draught, and calculated to save the life of a horse at this stage:—

Ol. Terebinthinæ	ʒij.	
Ol. Anchusæ	ʒj.	
Ol. Lini	℥xvj.	M.

Turpentine is a valuable stimulant and antispasmodic when judiciously administered; it should always be masked in oil. In obstinate cases of constipation or impaction a small dose of arecoline and eserine, after the purgative, is of great assistance in breaking down and expelling the obstruction.

Impaction of the Bowels, which in its symptoms resembles or is the cause of gripes, is due to neglected constipation. The retained ingesta undergo fermentation and evolve gases which produce flatulent colic, or the ingesta by their solidity block the canal and permit the accumulation of gases which should be voided per rectum. (*See* Gripes or Colic, pp. 74–80.) Impaction is the result of habitual dry feeding and want of bran, carrots, or other laxatives, or of inactivity of the liver or obstruction in its duct. (*See* Inflammation of the Liver, p. 88; and Jaundice, p. 90.) The necessity of a spring and autumn dose of physic, or aloetic ball, is insisted on elsewhere in these pages. There is invariably slight scouring before constipation and impaction. If there is fever with a hard pulse, do not give a purge, but trust more to frequent injections of glycerin and aperients. One or two hypodermic injections of physostigmine (eserine) will be a great help, the function of this drug being to increase peristalsis and thus act as an intestinal stimulant. The addition of apocynum to the eserine is gaining favour.

Diarrhœa, Purging, or **Scouring.**—Looseness of the bowels is always of serious import in horses: yes, critical reader, *always*, although you may own a horse whose tendency to looseness is habitual and no harm has come of it; yet be warned in time and adopt an astringent diet and other means to counteract it of which we shall hereafter speak particularly. There are horses known as 'washy,' perhaps in other respects desirable animals; but the moment their harness is put on they begin to unload the rectum, and as they journey on get looser and looser, positively purging at the end of a moderate journey, refusing their food; as a consequence they are unfit for work next day, and have that 'tucked up' appearance which every good horseman avoids when making a purchase. Some horses can never be cured of this disposition to purge, as it appears to be connected with a nervous excitability. Such animals are not fit for hunting or hard work in harness; they are show animals, and may be brought out twice a week for an hour or two, and require all the remaining interval to regain their appetites and drop their tucked-up bellies. This is serious to a man who buys a horse for work and not for show. These creatures generally come to an untimely end in the hands of some ignorant or careless persons, who bring them in hot and purging, and neglect to look after them when they are by-and-by found to be very ill, suffering from muco-enteritis. (*See* Enteritis, p. 94.)

For treatment of 'washy' horses a good deal may be done in the matter of diet and drugs in careful hands; but the morality of horse-dealing usually points to an early sale.

Withhold all green food and roots as well as bran ; give no hay that is not old and of the best ; choose sound, heavy oats at a price that will place them above suspicion of being kiln-dried or musty, or in any way defective, and let a moderate amount of good beans form a part of the daily diet. Beans are the most astringent of all horse foods, and contain the largest amount of nutriment in the smallest bulk ; they should be kibbled or crushed, especially for old horses whose teeth may be defective. On a journey, water should be mixed with a little oatmeal and the chill taken off ; careful management will do a lot towards making such an animal useful, but there is no specific for a downright 'washy' horse. A *Cordial Ball* as follows, after a journey, will help :—

Pulv. Opii	ʒss.
Ammon. Carb.	ʒj.
Pulv. Zingib.	ʒij.
Pulv. Camphoræ	ʒss.
Pulv. Anisi	ʒj.
Pulv. Gentianæ	ʒiv.

M. ft. bolus. Pro re nata.

Or a *Cordial Draught* as follows :—

Tinct. Opii	ʒiv.
Tinct. Cardam. Co.	℥j.
Spt. Chloroformi	ʒiv.
Aq. Camph. ad	℥x.

M. ft. haust. Pro re nata.

An alcoholic stimulant with astringent properties, such as port wine, rum, or brandy, given in flour gruel, often succeeds where everything else fails.

There is not such difficulty in treating diarrhœa that is occasional and accidental. It may be that nature is making an effort to rid the animal of indigestible or improper food, and the store of forage should receive immediate investigation. Whatever the cause, it must not be suffered to continue very long, as horses die of super-purgation, in this, as in many other respects, being more delicate than other animals.

Treatment.—Clothe the body and bandage the legs ; withhold all laxative food, such as grass, bran, roots, linseed, etc., and give either of the following draughts :—

1.

Tinct. Catechu	℥j.
Tinct. Opii	ʒiv.
Spt. Camph.	ʒiv.
Bismuth. Carb. vel Trisnit.	℥j.
Aq. Menthæ Pip. ad	℥x.

M. ft. haust.

2.

Aluminis	℥ij.
Sacchar. Ust.	ʒj.
Ess. Menth. Pip.	ʒj.
Aquæ	℥xxx. M.

This dose for a horse ; twice as much for a bullock ; not to be given to a milking-cow.

No. 1 may be repeated, with perfect safety, every four or six hours if necessary. If a ball is more easy to administer, the following may be substituted :—

Pulv. Catechu	ʒiv.
Pulv. Opii	ʒj.
Pulv. Camph.	ʒss.
Bismuth. Subnit.	℥j.
Glycerini	q.s. ut ft. bol.

This makes a heavy but not too bulky ball, and most horses can take a very much larger ball than the ounce size that custom has prescribed.

Inflammation of the Liver is said to be infrequent, and it is so in farm-horses and others not habitually fed on stimulating diet ; but it is not a rare complaint in large towns and among an equine population habitually fed on corn and dry food, stabled in close railway-arches or underground, as often happens where ground-space is valuable.

The symptoms are loss of appetite, scraping with the front feet, occasional lameness of the off fore-limb, hide-bound, semi-insensibility, often standing with the head in a corner and apparently deaf or wholly indifferent to surrounding objects and noises. The pulse is quick, but feeble ; the white of the eye reddish-yellow ; the other visible membranes more or less yellow, and tongue sticky. The bowels do not act, and, if the rectum be unloaded mechanically, the dung-balls will be small and glazed, dry, and, when trodden upon, will squeeze out instead of readily falling to pieces.

Tenderness sometimes exists on the right side, and the horse groans when turned round; but these last are not reliable symptoms, as the same occur in pleurisy, a wholly different affection.

The old-fashioned treatment was to bleed and give calomel and aloes, and we should not like to say it was bad; but, now that the lancet has gone out of fashion among the leading veterinarians, it will hardly do for the rank and file to practise it, lest one of the great should be called in and, condemning the treatment, bring discredit upon the less eminent but not less useful prescriber.

The treatment that commends itself to the present generation is to give enemata of soap and water at frequent intervals, counter-irritation on the right side over the region of the liver, and salines. Mustard may be used as the counter-irritant, though the counter prescriber would do better to supply 'lin. ammon. ℥vj. statim applicand.' A bold aperient dose is also advisable at the outset, since constipation is an obstinate concomitant of liver inefficiency, and retained ingesta frequently cause the death of horses when very little else is the matter with them. In bilious fever give 2 drachms each of magnes. sulph. and ammon. carb., followed by ol. lini, tr. opii, and potass. nitras.

Give ½ to 1 oz. of aloes according to the size of the animal, with 60 grains of calomel as a first dose. The prescriber must not be disappointed if the animal will not eat and shows no immediate improvement, as probably the aloes will not act as an aperient to any extent; but it will just prevent that complete stagnation of the bowels which is the cause of death more frequently than the actual disease of the liver. One of the chief functions of bile is to give that stimulating action to the intestines which propels the contents and at the same time arrests fermentation; hence constipation follows when the proper quantity or quality of bile is not poured into the intestine.

A saline draught night and morning, containing a stimulating tonic, is advisable, since all appetite is lost, and the circulation is much enfeebled, as may be known by the coldness of the extremities ; sometimes two legs feeling cold, and at others three or four, although the body temperature, taken at the rectum, may be as high as 105° F.

Saline Draught.

Mag. Sulph.	℥ij.
Potass. Nit.	ʒvj.
Potass. Bicarb.	℥j.
Æther. Rect.	ʒij.
Liq. Ammon. Acetat. ad	℥x.

M. ft. haust. Nocte maneque sumend.

After three or four doses of the above a couple of drachms of ext. gent. should be added to each dose, omitting the ether, as there is nothing in the Pharmacopœia that will induce appetite in a horse so well as gentian.

Jaundice is not a disease, but a symptom of liver obstruction. It is easily recognised by the staining of the visible membranes, as the eye, mouth, nostrils (Schneiderian membrane), etc. The treatment should be aimed at getting the liver to work, subduing nausea, unloading the bowels, promoting circulation and skin-action by clothing, bandaging, and gentle exercise, green food when obtainable, or carrots in winter ; and for medicine—

Potass. Nit.	℥j.
Mag. Sulph.	℥iv.
Liq. Ammon. Acet. ad	Oj.

M. ft. haust. Omni nocte sumend.

Give three such doses if the bowels respond, then vegetable tonics should be resorted to. If there is a high pulse, fæces clay-coloured and fœtid, and mucous membrane yellow, do not give a purge, but proceed as for constipation. Much debility follows on jaundice, and a subsequent tonic treatment is generally necessary.

Vegetable Tonic.

Ext. Gentianæ	ʒj.
Ext. Calumbæ	ʒj.
Pulv. Fœnugræc.	ʒiv.
Pulv. Zingib.	ʒj.
Excipient.	q.s. ut ft. bolus

Nocte maneque.

In all affections of the horse's liver there is one common symptom of nausea, denoted by curling of the lip, 'turning up the nose,' as is the expression, while the urine is in every case high-coloured. It should be noted that the curling of the lip is also a symptom of overdoses of opium preparations.

Stomatitis.—This is a term over which some of our pharmaceutical brethren stumble. It is inflammation of the mucous membranes of the mouth, not of the stomach, which is discussed under the head of gastritis (p. 93). There are several forms of stomatitis, into which it is not necessary for us to enter. The chief symptom is the eruption of vesicles in and around the mouth. It has some resemblance to thrush in infants, aged persons, and those *in extremis*; varying in its intensity from a simple eruption to ulcerative sores. Bad sanitary conditions and improper food are thought to be the chief causes, and its greater frequency among the young is also noted. It often proceeds from a disordered stomach, as there is a close connection between the mouth and the stomach. Treatment consists in good hygienic conditions, exercise, fresh air, mild aperients, preferably of the oleaginous or saline type, and for mouth washes, or application to the lips, a saturated solution of boric acid (1 oz. to a wine-bottleful of water).

Lampas.—Horses of all ages are liable to be troubled once in a while with this disease. It is simply inflammation of the gums; the gums become affected in a similar manner to those of an infant in the process of teething. The horse is unfortunately often compelled to suffer more from the hands of man through cruel or even barbarous treatment than from the disease itself. All that is required is a dose of laxative medicine and alteratives. Rub over the swollen parts briskly for a few minutes a little common salt, to be followed with a lotion of tr. myrrh. ℥ss., aquæ ʒiij., applied to the affected parts with a sponge. Two applications are usually sufficient.

Glossitis, or **Inflammation of the Tongue,** is generally brought about by external causes, such as putting a rope or gavil in the mouth and including the tongue in the hank or hoop, which often cuts it, and thus inflicts a violent and severe injury on the part. The tongue may also be injured by sharp and irregular teeth, and even by the animal itself biting it, or it may be wilfully injured by an attendant, or by the administration of too hot fluids. Injuries are also caused by injudicious and insufficient dilution of irritable and caustic drugs, such as preparations of acids, ammonia, turpentine, and iodine. In glossitis the tongue hangs out of the mouth in a soft, swollen, and flabby condition. If the injury be due to a mechanical cause it must be treated accordingly. No part should be cut off or removed, but as far as possible the parts should be brought into apposition and kept so by means of stitches or bandages as required. If the injury is due to chemicals, mild astringent lotions (such as vinegar and water, solution of sodium hyposulphite or potassium permanganate or alum) should be resorted to; and if the injury or inflammation should extend back to the pharynx, the lotions should be put on a cloth and placed in the mouth, renewing several times a day. Paralysis of the tongue is present more or less when the brain is affected, but gradually leaves the animal as the disease subsides, therefore in this form the trouble is secondary. It is also induced by traction of the tongue as seen in giving a ball, when the operator never thinks of what he has in his hand, and if the animal inclines to back he holds on by the tongue, with the result that not only is paralysis produced, but serious injury is inflicted on the tongue and its pharyngeal attachments. In this case the organ hangs out of the mouth in a sordid and paralytic condition, accompanied by a profuse discharge of saliva. It afterwards becomes dry, cracks, and finally ulcerates, and gangrene may follow. Treatment here is to force the tongue back into the mouth as much as possible, and retain it there by tying a bandage round it and the lower jaw. Sponge with a mild astringent and antiseptic lotion, and assist nature in the removal of the cause. An electuary consisting of treacle, nux vomica, potassium iodide, and arsenic may be given by spreading on the tongue thrice daily.

Inflammation of the Stomach, or **Gastritis,** is sometimes met with in horses. When they are suffering from it the mouth is full of frothy saliva, and dribbling in ropes is almost constant. There is pain over the stomach region, and the animal often paws with the left fore-foot only. The habitual use by carters and others of irritant drugs may be the cause, but it is a very serious condition when it exists, and the most skilful treatment often fails to save the animal's life. Gastric sedatives are indicated, and a soft diet, easy of digestion—crushed and scalded oats, carrots, grass, etc. ; and for medicine—

Acid. Hydrocyanici Dil. (B.P.) . .	ʒss.
Potass. Bicarb.	℥j.
Aq. ad	℥x.

M. ft. haust. Nocte maneque.

The chemical incompatibility of the ingredients in the above mixture need not be considered ; the sedative effect is well proved. Diet and rest are of importance ; chilled water should be allowed at the animal's discretion. If the above fails, soda and calumba may succeed in the following proportions :—

Sodii Bicarbonat.	ʒij.–ʒiv.
Infus. Calumbæ	℥ij.–℥iv.

M. ft. haust. Nocte maneque.

An acid mixture with gentian is also useful, *e.g.* :—

Acid. Nitrohydrochloric. Dil. . .	℥j.
Inf. Gentian. Co.	℥iv.

Ft. haust. Bis terve die.

Enteritis is an inflammation of the mucous membrane lining the intestines, in which the muscular layer is more or less involved. It differs from spasmodic colic, which affects the muscular coat chiefly. It is very fatal, and too often is not recognised in time to be treated with a fair hope of success. Sometimes a shivering fit and the usual accompaniments of a febrile condition attract the attendant's notice, but it more commonly happens that the animal is discovered scraping with his fore feet, looking round at his flanks from time to time, getting down and up again, and in many respects behaving as if suffering from colic, but not to the ordinary observer so badly. The pulse, which in colic or gripes is not much affected, is in enteritis quick and wiry, the extremities cold, and tenderness of the belly is evinced on pressure, which is not the case in gripes. The breathing is quick and the countenance extremely anxious. In colic there are remissions of pain, and the horse will commence to feed until a fresh paroxysm occurs ; but in enteritis he gradually gets worse, and persistently refuses food, the pain being continuous, with paroxysms of excessive severity. Among the causes of this disease may be mentioned drinking cold well-water when heated by exercise, east winds, chills, overfeeding, bad hay, and musty oats. The absorption of some ptomaine has also been suggested.

Treatment.—Hypodermic injections of morphine and atropine are given every half-hour until the pain is relieved, or, where that is not possible, give pulv. opii ʒij. and calomel ʒj., followed three hours later with pulv. opii ʒj. The following dose is often effectual :—

Camphoræ	ʒj.
Tr. Opii	℥j.
Tr. Aconiti (Fleming)	♏v.–♏x.
Ol. Lini	q.s. M.

To be given in gruel.

Repeated small doses (ʒj. to ʒij.) of tinct. chloroformi et morphinæ have proved successful in some cases.

Injections of warm water per rectum should be frequently employed, but it is not desirable to be hasty in opening the bowels, as passage of the contents over the inflamed parts increases the severity of the pain and delays recovery. The animal should be in a loose box well aired but without draught, and have plentiful bedding, with chilled water to drink.

Cold, or **Catarrh.**—Just as a man neglects a cold in his own person, so is the horse-owner apt to disregard a cold in his horse. We are all aware that a neglected cold often ends fatally with other people, but in this matter we act on the belief that 'all men are mortal but ourselves.' We assume that our horse will get all right again, but a cold or catarrh is always a matter of serious concern in a horse. His great volume of lung-power is not a safeguard but a danger to him, and a common cold is far more likely to do irreparable injury to him than it is to a weakly human being. It is a common observation that robust men, mature or middle-aged, are more likely to die when attacked with pneumonia than are children with much less respiratory capacity. So with the horse: his great lungs are liable to congestion from comparatively small causes, and the results are very serious.

The symptoms of a cold are rigors or shivering, standing with the legs under the belly, all the feet being brought nearer and the back arched; refusal of food; sore-throat, evinced by nodding the head and cough; 'quidding,' or dropping the food out of the mouth; coat 'staring' or sticking up instead of looking smooth and shiny—these are the preliminary symptoms of a bad cold; when less severe the rigors may not be noticed by any but a good horseman, and the first indication to be observed may be a cough or a cold and running at the nose, with more or less languor and indifference to food. Here is the danger with an inexperienced horseman—he puts the horse to work as usual and brings him home seriously ill. If a cold is observed to be coming on, the horse should not be put to work, but given a bran mash with pot. nit. ʒss., and mag. sulph. ʒiv. to ʒviij.—the legs warmly bandaged and the stable kept moderately warm, not hot, and by no means draughty ; and this will probably be all the treatment required. If successive rigors follow and common fever seems to accompany a cold, a fever draught should be given, the temperature taken at the rectum, and the observation repeated in a few hours, when, if it has run down again, no great good will be derived from internal medicines.

If sore-throat is evinced as well as the above symptoms, a good warm liniment should be applied freely. The following has proved serviceable and can be recommended :—

Lin. Aconiti	℥j.
Lin. Tereb. Acet.	℥iij.
Lin. Saponis	℥ij.

Ft. linimentum.

Mustard applied rather thin answers well for closely clipped or fine-skinned animals, but for cart-horses and others with a heavy coat the liniment suggested can be better depended on to penetrate through the thick and greasy covering. If this produces a sharp reaction, and swelling and soreness to the touch, the cough will probably be rapidly relieved and softened ; the swelling outside appears to 'clear the pipes,' and the animal breathes better as soon as the distress caused by the stinging of the liniment has subsided. If the throat symptoms continue, a belladonna electuary should be used, as follows :—

Ext. Belladonnæ Sicc.	ʒj.
Potassii Chlorat.	ʒj.
Oxymel. Scillæ	q.s. ut ft. electuarium

Bis terve die si opus sit.

This should be prepared *secundum artem* and placed upon the end of a broad spatula as a preliminary to putting it high up on the back of the tongue. It is not a difficult operation if the tongue is quietly drawn out of the mouth with the left hand and the spatula introduced with the right. This has given immediate and permanent relief in many very bad cases where to attempt to give a drench or a ball would have brought on a paroxysm of coughing.

We have also seen great benefit in acute sore-throat from homœopathic doses of aconite and belladonna alternately. In colds, steaming the head by placing a nosebag over the nostrils, or holding the animal's head over a pail of hot water medicated with eucalyptus oil or camphor, very often gives great relief.

A discharge from the nostrils, at first watery and gradually thickening, is often the only symptom of catarrh apparent to the attendant; this should be sponged off the muzzle frequently and the adjacent parts anointed with a little lard or paraffin. molle (B.P.), which prevents scalding and discomfort.

Give the horse carrots, placing them on the floor rather than in the manger, as the head is better cleared of the discharge by being kept in a pendulous position. Occasional sequelæ are whistling, thick wind, and roaring.

Coughs.—A cough is the symptom of some derangement ot a portion of the respiratory organs. It is of paramount importance in prescribing medicines for an animal with a cough to recognise this fact. Coughing arises from irritation of some part of the respiratory system, and may be either simple or chronic. A study of the various coughs, usually divided into classes, should be made, as it proves of great assistance in diagnosing and prescribing, and makes it easier to alleviate the cough by attacking the cause. The following grouping of coughs is also applicable to horned cattle:—

The dry cough arises from the dryness of the mucous membrane of the air-passages, and is heard in the earlier stages of inflammatory attacks. It is divided into short, spasmodic, hollow, broken-winded, hacking, etc. *The short cough* is indicative of pneumonia; *spasmodic cough* of broken wind; *hollow or sepulchral cough* of chronic disease, such as alterations of the structures of some portion of the respiratory organs; the *broken-winded cough* is feeble, short, and single, and is quite diagnostic; *hacking* is got in pleurisy, and at times seems to be cut in two. *The moist cough* indicates the second stage of an inflammatory attack, when the inflamed membranes have begun to throw out secretions of the mucous follicles of the affected parts. There are other coughs that do not arise from irritation of the air-passages, but proceed from irritation outside the air-passages—*e.g.*, indigestion, teething, worms in the stomach and intestines, liver and heart diseases, etc. These are usually dry, and are valuable aids to diagnosis when studied in connection with other symptoms.

It is well known that animals with narrow, shallow chests are predisposed to cough from any trivial cause.

Treatment.—Dry hard food must be avoided ; and in giving medicines do not use the form of balls or draughts. The former are nearly certain to be coughed back, and may get lodged in the nose—an awkward accident—while draughts require the head to be elevated in a manner favourable to choking. Electuaries are the best form. The application of a roll of flannel soaked in hot water round the throat, covered with some waterproof substance, is often of great service.

As regards medicine, keep the bowels open, and use a sedative and astringent electuary, such as—

Camphor.	ʒiv.	
Ext. Belladonnæ Sicc.	ʒiv.	
Acid. Acet. Dil.	℥ij.	
Mellis vel Theriacæ	℥x.	M.

A tablespoonful twice a day to be smeared on the tongue.

Or this :—

Tannin	ʒij.	
Rectified Spirit	℥ij.	
Honey	℥x.	Mix.

To be given by smearing on the tongue.

Chronic irritation of the larynx requires different treatment ; the cough here is loud and hard, but not so frequent, occurring chiefly when the animal is changed from the stable to the fresh air, or *vice versâ*. There are no general symptoms. *Cough-balls* are here, if anywhere, of use. Good formulæ are :—

I.		II.		III.	
Pulv. Opii	ʒss.	Pulv. Camphoræ	ʒj.	Ext Bellad. Sicc.	ʒj.
Pulv. Scillæ	ʒj.	Pulv. Opii	ʒj.	Ext. Hyoscyami	ʒj.
Pulv. Aloes	ʒj.	Pulv. Digitalis	ʒj.	Pulv. Ipecacuanhæ	ʒj.

Make into a ball with common mass or linseed meal and treacle.
One every day.

Blisters to the throat afford relief in some cases, as also do stimulating liniments.

If the cough is likely to become chronic, give the following :—

Ammon. Carb.	℥iss.
Pulv. Scillæ	℥iss.
Pulv. Belladonnæ Fol.	℥iij.
Oxymel. Scillæ	q.s.

M. ft. bol. vj. Unus nocte maneque.

Bronchitis.—In treating of bronchitis, pneumonia, and pleurisy, or pleuritis, it is usual for authors and lecturers to speak of them as distinct and separate affections, and they may be so met with, but the practitioner finds them very often together in the same animal—broncho-pneumonia and pneumonia with pleurisy, and so on. The treatment by counter-irritants is applicable to all, but in bronchitis the mustard or liniment should be applied from the larynx all the way down the windpipe.

Bronchitis, or inflammation of the lining membrane of the air-tubes, is characterised by more or less noise in breathing, which in bad cases may be heard at some distance, but to distinguish milder attacks the practitioner places his ear close to the windpipe, and again upon the ribs, when a rough or rattling sound as of air passing over roughened surfaces or through frothy fluid may be very distinctly heard. The ailment is caused by chills and exposure, or by invasion from ordinary catarrh, and occasionally by foreign bodies; in cattle by the husk parasite, *Filaria bronchialis* (*see* Hoose in Calves, under Diseases of Cattle).

The treatment is general and local. General treatment is on the plan recommended for simple fever. Local treatment consists in protecting the neck and chest with rugs, etc., and in acute cases applying blisters. In this disease there is an obstruction of purulent mucus in the air tubes, for which, as expectorants, ipecac. and tartar emetic, of each half a drachm, may be added to the following ball :—

Pulv. Camphor.	ʒj.
Pulv. Digitalis	ʒiss.
Pulv. Potass. Nit.	ʒiss.
Pulv. Lini sine Oleo	ʒij.
Theriacæ	q.s. ut ft. bolus

One every day.

A cough, at first hard and dry, undergoing modifications, with the ordinary symptoms of fever, such as accompany inflammation of the lungs, may be looked for, and treated in the same way. (*See* Pneumonia, p. 101.)

Expectorants should be more freely used ; although the patient does not expectorate in the sense that men do, he coughs up and rids himself of phlegm, by the nose chiefly, but sometimes by the mouth. The distressing hard dry cough may be frequently relieved by the following electuary :—

Cetacei	ʒiv.
Ext. Belladonnæ Sicc.	ʒj.
Ext. Opii	ʒj.
Potass. Nit.	ʒij.
Mellis Opt.	q.s. ut ft. elect.

Bis die supra linguam.

This should be applied in the manner advised in sore-throats. (*See* Catarrh, p. 96.)

To give balls, or even draughts, in acute affections of the respiratory apparatus is difficult and dangerous, and we strongly recommend electuaries, alike for safety, convenience, and directness.

One often finds cases of chronic bronchitis relieved by an electuary containing 1 drachm each of digitalis, squill, camphor, myrrh, and extract of belladonna.

Linseed and bran mashes, scalded corn, damped hay, hay tea, carrots, etc., should be advised, and everything dry, dusty, or inferior in quality put out of the animal's reach.

If for any reason electuaries cannot be given, the following draught every six or eight hours may be prescribed :—

Vin. Antimonialis	ʒij.
Vin. Ipecac.	ʒij.
Tinct. Camph. Co.	℥j.
Tinct. Scillæ	℥j.
Liq. Ammon. Acetatis ad	Oss.

M. ft. haust.

Or this :—

Spt. Æther. Nit.	ʒiv.
Æther. Rect.	ʒiv.
Tinct. Belladonnæ	ʒiv.
Syr. Papav.	℥iss.
Aq. Camph. ad	℥xij.

M. ft. haust. Bis terve die.

Pneumonia is inflammation of the lung substance or parenchyma, and is distinguished from congestion of the lungs, which is engorgement of the pulmonary vessels, brought about in a different way (*see* Congestion, p. 111). We are aware that the terms are somewhat mixed in human practice, but they must be carefully distinguished in equine medicine.

Pneumonia is often brought on by a neglected cold—'invasion,' as it is called ; that is to say, the catarrhal affection spreads instead of abating, invading the lung substance. This will be known by the rapid increase of temperature, short hurried respirations, redness of the membranes of the eye and nostrils, cold extremities, dilated nostrils with coffee-coloured discharge, hanging head, continual standing, and loss of appetite. A complete absence of appetite in any chest disease is a very bad symptom. The right lung in the horse is oftener affected than the left. If the prescriber is called in early, he should apply hot-water fomentations immediately to the sides of the chest, from the edge of the shoulder-blade bone to the last rib, on one or both sides as may be necessary.

The following draught should be given night and morning, until the temperature falls :—

Tinct. Aconiti (B.P.)	♏x.
Spt. Æth. Nit.	℥j.
Liq. Ammon. Acet. ad	℥x.

M. ft. haust.

If giving a draught upsets the animal, or if it causes coughing, the following ball will be found of service :—

Pulv. Pot. Nit.	ʒij.
Pulv. Ammon. Carb.	ʒj.
Pulv. Gentianæ	ʒij.
Pulv. Cinchonæ	ʒij.
Glycerini	q.s. ut ft. bolus

One to be given two or three times daily.

After the first two or three days, when the temperature will be down if the case is likely to terminate favourably, the following should be given :—

Æther. Sulph.	ʒij.
Tinct. Opii	ʒj.
Potass. Nit.	ʒij.
Inf. Gentianæ Co. ad	℥xx.

M. ft. haust. Bis die.

For reducing the temperature, 1-drachm doses of ammon. carb. in bolus, along with magnes. sulph., are recommended. Great prostration, if nothing worse, follows upon pneumonia, and, despite the most careful treatment, a large proportion of patients die either from suffocation by the blocking up of the lungs, or from fluid exudation into the cavity of the chest, or from relapse and exhaustion. Puncturing the thorax and drawing off the serum is occasionally performed, but it is doubtful if it ever saves a case.

In the convalescent stages tonics should be given, but no iron, copper, or other minerals. The following ball is suitable :—

Quininæ Sulph.	ʒj.
Ext. Gentianæ	ʒij.
Pulv. Anisi	ʒij.
Pulv. Opii	gr. xx.
Picis Liquidæ	q.s. ut ft. bolus

Unus omni die.

During the early stages of the disease it may be necessary to keep the bowels open with clysters of warm water and soap, but no aperient should be given stronger than mag. sulph. 4 or 6 oz., or ol. lini 10 to 15 oz., preference being given to the latter unless the temperature be very high. After aconite and pot. nit. we know of nothing that so quickly reduces the temperature without harmful consequences as mag. sulph. Horses recovering from this disease need much care, and should only have gentle exercise for some time.

Septic Pneumonia.—Aboard ship, among armies on the march, and in some insanitary stables, a terribly fatal form of infectious or septic pneumonia occurs, and the prescriber is warned against treating, *in absentiâ*, any second or third case which may occur. A client may be injured instead of helped by supplying him with medicines when he ought to place himself under the guidance of the qualified veterinary surgeon. Septic pneumonia carries off high-bred dogs like flies in cold weather. Anti-streptococcic serum is the up-to-date remedy.

Pleurisy.—In point of frequency and severity, pleurisy is the most important disease of the respiratory organs of the horse. It generally results from standing in a cutting wind when heated—as, for instance, when, after ploughing, the men sit down to their midday meal, and leave the horses on a hill-top.

Commercial travellers, doctors, and others who drive fast and leave their horses standing about in a draughty street, are apt to pay a penalty in this way. Warm, badly ventilated stables, excessive use of warm food, and heavy clothing predispose a horse to an attack.

The symptoms are much the same as in pneumonia, but the sharp dry cough is different at first, and the animal grunts or groans when made to turn, and flinches when the ribs are pressed ; he often looks round at his sides, and this gives rise to mistakes among the inexperienced, who take it as a symptom of gripes. Pleurisy is often mistaken, in the first stages, for founder and colic ; there is very painful breathing, which is also seen in pleurodynia. It may be taken as a general rule that horses suffering from inflammatory diseases of the chest do not lie down, while they seek by every recumbent attitude to get ease when afflicted with abdominal pain. The disease also attacks cattle, but while in such cases only one side of the animal is affected, in the horse both sides are involved, as the mediastinum is perforated, which is not the case with cattle.

The treatment of pleurisy should be directed to modify the inflammation and allay pain in the first stages, then to support the system and promote absorption of fluid in the chest. Many practitioners advocate bleeding or the use of mustard as a counter-irritant ; but both methods, instead of checking inflammation, tend to increase the secretion of fluid. A subject of pleurisy should be put into an airy loose-box, the body well clothed, and a diffusible stimulant given with a view to regulating the circulation. To open the bowels, aloes must not be used, as super-purgation is easily induced. Six ounces of linseed oil and one of spirit of nitre, or four or five ounces of magnes. sulph., is preferable. To allay pain nothing is equal to hot rugs. Dip the rug into boiling water, wring it out, and quickly apply it to the chest ; keep it in position by another rug and a roller, and as soon as cool replace by another. When the acute symptoms have passed off, the following ball may be given twice a day :—

Ammon. Carb.	ʒj.
Pulv. Zingib.	ʒij.
Pulv. Resinæ	ʒj.
Lini Far. et Theriacæ	q.s. ut ft. bol.

It has a remarkably beneficial action on the bowels. Should the pulse remain at 50 or 55 per minute, and the breathing be laboured, considerable effusion in the chest is probably the cause; auscultation will prove the surmise. Then diuretics and stimulants are indicated. A mixture of equal parts of spt. æth. nit. and liq. ammon. acet., given three or four times a day, is very active; dose, half an ounce. The remedies suggested for bronchitis are generally suitable for pleurisy, but the after-treatment should combine pot. nit. and iodides, as the effused material is apt to cause adhesions, and anything likely to promote absorption and excretion is of benefit :—

Potass. Iodidi	℥ss.
Potass. Nit.	ʒij.
Ext. Belladonnæ Sicc.	ʒj.
Ext. Opii	ʒss.
Ext. Gentianæ	ʒij.
Pulv. Anisi	q.s. ut ft. bol.

Omni nocte.

As a last resort tapping may be tried. This is a simple operation; a small cannula and trocar are thrust into the chest at the anterior border of the sixth or seventh rib; but this had better be done by a professional man. Do not starve the animal on bran-mash, but allow carrots, turnips, grass, etc., with boiled linseed and barley, and a constant supply of clean cold water.

Pink Eye is a kind of horse-sickness which was first called by this name in America, but is now known all over Europe as a form of influenza, and, like its congener in man, takes different courses.

There are various forms of influenza or pink eye: (1) simple or catarrhal; (2) pulmonary or thoracic; (3) abdominal or enteric; (4) rheumatic, an invariable sequela to catarrhal.

The complications of the thoracic form are capillary bronchitis, bronchitis with cardiac disease, and pleuro-pneumonia or pneumonia. The prominent symptoms, not being constant, may lead to confusion among those having but little experience of a disorder which at one time appears as an acute attack of catarrh, at another affecting the liver, and again in other seasons displaying some depressing influence on the meninges of the spinal cord, with symptoms of paralysis or lameness which is not confined to any particular limb but may affect the muscles of the loins. If a horse dies suddenly from influenza, it is generally due to an embolism of the heart.

With such a hydra-headed monster it is difficult to lay down any one plan of treatment, but it is essential to advise the immediate nursing and isolation of smitten animals. In nearly all cases it will be safe to give a stimulant, as follows :—

Ammon. Carb.	ʒij.
Ext. Gent.	ʒij.
Spt. Æth. Nit.	℥j.
Aq. ad	℥xvj.

M. ft. haust.

Or this may be given :—

Potass. Nitrat.	ʒij.
Ext. Belladonnæ Sicc.	ʒss.
Camphoræ	ʒss.
Spt. Æther. Nitrosi	℥j.–℥ij.
Liq. Ammon. Acet.	℥iv.
Aquæ	q.s.

For one dose.

The first care of the veterinarian should be to counteract the tendency to collapse. Large doses of quinine and also alcohol have frequently been very serviceable. The legs should be bandaged and the body clothed, the stable kept warm but well ventilated, and, after some stimulant has been given at intervals of four hours or so, the treatment should be directed to the alleviation of any special symptoms. If the patient begins to 'blow,' the sides of the ribs should be stimulated with mustard or an ammonia liniment.

The bowels should be regulated by small doses of mag. sulph., ℥ij. to ℥vj. daily, with pot. bicarb. ℥j. and pot. nit. ℥ss.

Belladonna is a favourite remedy with some vets., who give ʒj. or more of extract night and morning. It may almost be said that any tonic may, with advantage, be given after the first acute symptoms have passed away. Of the many agents the Pharmacopœia offers we prefer quinine ʒij. to ʒiv. and ext. gentian. in ʒij. to ʒiv. doses alternately; the latter may be given as an electuary or in solution. Balls should be avoided in all diseases accompanied by sore-throat. Mustard or liniments to the throat also give relief.

The parotid and submaxillary glands often become enlarged, and have a tendency to remain so. One of the best remedies for reducing them after the disease has spent itself is 1 part of iodine to sapo mollis 20 parts, bis hebdomada—as an external application, of course.

Carrots, mashes, linseed, scalded corn, steamed hay, and everything that can moisten the food and tempt the invalid, should be adopted, as loss of appetite is a common symptom. When convalescent, great care should be exercised in getting the patient to work, which should be done by slow degrees.

Influenza has recently been treated with a serum, but the objection to this method of treatment is that the serum requires to be prepared from the organism of the disease as found in particular localities, there being many varieties of influenza, and no one serum being effective for all.

Broken Wind is fortunately of less frequent occurrence now than formerly, owing to the better dietary and greater air-space that horses enjoy, besides which it seldom happens that broken-winded mares are bred from. They are very apt to be sterile when tried. Broken wind is a result of indigestion, so that attention to diet is of the first importance.

A really pronounced case of broken wind can be distinguished by anyone without a practical knowledge of the subject, yet there is scarcely any equine defect that gives rise to more swindling among 'copers' or low horse-dealers who frequent fairs and palm off useless creatures upon the unwary.

Broken wind is usually preceded and accompanied by a characteristic cough, which the veterinarian will recognise although the flanks may have been 'stilled' by a master of the art of setting horses' wind.

The cause is generally agreed to be feeding on bulky and innutritious food, causing distension and undue pressure upon the diaphragm. The lungs, when examined *post mortem*, do not invariably show the air-cells ruptured into one another, but exhibit other alterations of structure of the lung-substance, heart, and pericardium. The pathological condition is not so clear as to be definable in a few words; neither are the best authorities altogether in accord.

Palliative remedies are frequently in demand, and of considerable service; and of these we will mention a few examples from the new and the old schools. Whatever remedies are given, it must be borne in mind that dieting is the chief consideration; the horse which is comparatively useless when fed on offal hay and the rubbish that farmers cannot sell, may be quite a useful animal in the hands of a judicious stableman, who will feed it on good food in small bulk and always damped, never allowing anything like an approach to distension or too much water previous to starting on a journey. Granted these conditions, a great deal of help can be afforded by the sedative agents suggested.

We have alluded to the tricks practised by unscrupulous horse-dealers for 'setting the wind'; it is wonderful to what extent they succeed. The horse is fasted for many hours and then given large quantities of shot and tallow, bacon fat and tar, so that on the morning of sale very little motion of the flank is observed, and that may be accounted for by the seller in many ways, such as 'hot weather,' 'ridden a great many miles,' etc. Of course, the fraud is discovered when too late, and in a case tried not very long ago we heard a witness, with a delicate sense of honour specially adapted to the profession, say, 'Any *respectable* dealer would tell the purchaser afterwards, so that he might know what to do.' This gentleman did not intend to 'convey the idea that the seller would teach him how to set his wind, but caution him that the horse was quite unfit to go to work.' An old remedy is the following :—

Auri Mosaici (pulv.) *	℥viij.
Myrrhæ	℥iv.
Inulæ	℥iv.
Anisi	℥iv.
Baccæ Lauri	℥j.
Croci	℥ss.
Oxymel. Scillæ	q.s. M.

The author of the foregoing recipe, having a doubt as to the efficacy of aurum mosaicum, substituted for it a like quantity of pulv. scillæ. A ball of the above the size of a pullet's egg is recommended to be given daily, or the following :—

Gum Ammoniacum	of each ℥ij.
Galbanum	
Asafetida	
Cinnabar of Antimony	℥vj.
Saffron	℥ss.

To be made into paste with honey: and here also a quantity the size of a pullet's egg is prescribed every morning.

Modern practitioners, recognising the pathological condition of the heart and lungs in this disease, give digitalis and camphor, tar and other sedatives, of which the following are good combinations :—

Pulv. Digitalis	ʒij.
Pulv. Camphoræ	ʒj.
Pulv. Antim. Tart.	ʒj.
Pulv. Opii	ʒj.
Pulv. Anisi	ʒj.
Gum. Ammoniaci	ʒj.
Picis Liquidæ	q.s. ut ft. bol.

Alternis noctibus.

---

* Aurum mosaicum consists of mercury, tin, sal ammoniac, and sulphur, equal parts.

Gum. Asafetidæ	ʒj.
Gum. Ammoniaci	ʒj.
Pulv. Glycyrrhizæ	ʒiv.
Pulv. Digitalis	ʒj.
Adipis	ʒij.
Picis Liquidæ	q.s. ut ft. bol.

Omni nocte.

These remedies should not be persisted in when the acute symptoms have yielded, but recourse may be had to them from time to time. Any kind of fat with tar gives relief, and many horses will grow to like tar and lick it up if offered.

Many subjects of broken wind are benefited by the habitual administration of arsenic or arsenious iodide, and the fullest advantage may be taken of the drug if given with tar and sedatives of the class included in the foregoing recipes. Doses of arsenious acid of 5 to 10 grains may be first tried, and increased to twice the weight after a little time. Some dispensing chemists have refused to make up prescriptions containing 7-grain doses of arsenic for a horse, and have been foolish enough to tell the customer that the dose is dangerous, thus reflecting upon the practitioner. It is wise to make oneself acquainted with veterinary posology, and all exceptional doses should be marked (!).

Roaring and **Whistling** are terms applied to horses which make a noise during inspiration when their breathing is accelerated by exercise. They represent degrees of unsoundness, as the words imply, and commonly follow upon diseases of the respiratory organs, but they are also hereditary. Either defect is a great detriment to a horse, and of course a cause of unsoundness, although some celebrated horses have won races despite the fact that they were confirmed roarers. Whistling is not so bad, but still is very objectionable, and liable to become worse. There is not much to be done in the way of treatment. The operation of tracheotomy, by which a tube is introduced into the windpipe, answers the purpose in some cases, and there are a few veterinarians who make a speciality of it. The illustration given below sufficiently indicates that this treatment is beyond the chemist. A few professors, at home and abroad, undertake the cure of roaring by a delicate operation on the larynx ; but the treatment is of such recent date that time alone will prove its efficacy. A Belgian vet. claims to be able to cure roaring in horses by means of small doses of strychnine and iron arsenate, with 20 grains of potassium iodide daily.

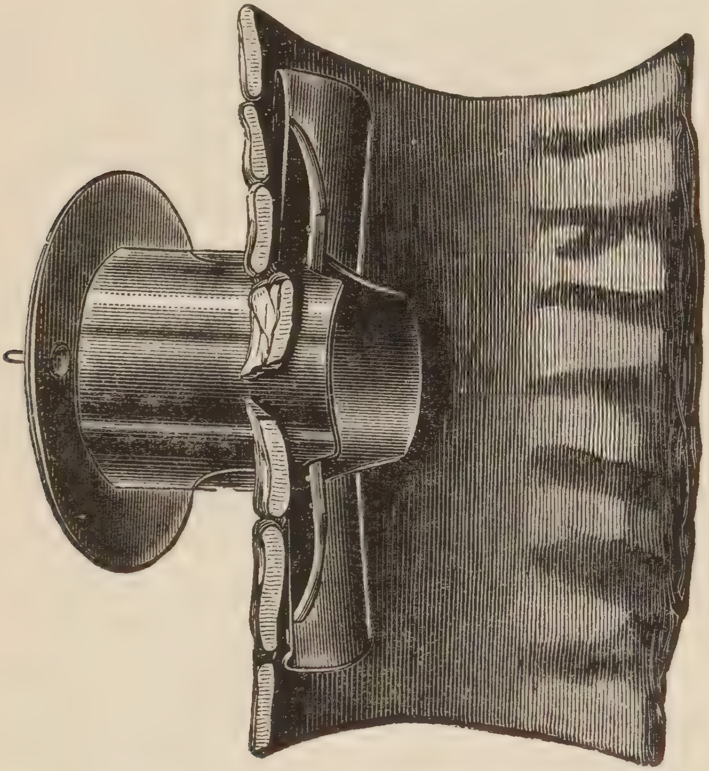

FIG. 8.
JONES'S TRACHEOTOMY TUBE AS INSERTED INTO THE TRACHEA.

Congestion of the Lungs is engorgement of the pulmonary vessels—not the vessels which go to supply the lungs with nutrition, but those conveying blood into the lungs for re-oxidation. It is a result of over riding and driving, and less frequently of chill or exposure. Horses that are not in 'condition' are the subjects of it. By 'condition' we mean in training for work. To 'condition' horses or prepare them for races is in these days almost a fine art. Its adepts are not perfect in the way of educational attainments and manners, but their special skill is sought for by princes and noblemen. By diet, exercise, etc., the big gross belly is disposed of, and all the muscles of the body and limbs are made to stand out like cords and feel quite hard. The horse in hard or racing condition looks thin and 'tucked up,' as his muscular powers and heart have been developed to the highest possible pitch, even at the expense of his vegetative system, which presently demands a relaxation from the carefully sifted corn to a diet of grass, slops, etc. This means of course letting a horse get out of condition, and has to be done from time to time with racers, who cannot be always in such high fettle, even if their legs do not fail and necessitate a holiday. Hunters are treated in somewhat the same way, being taken up from grass or straw yards in August or September, and trained, or conditioned as it is called, by degrees, so as to be ready for the hunting season. It sometimes happens that the conditioning has not been begun soon enough, or has been hurried on too fast, so that the first good run over a country finds out the animal that is not thoroughly 'fit,' and congestion of the lungs is too often the result. On reaching the stable, if not before, dulness is observed, the animal shivers and trembles, the legs and ears are cold, the respiration is rapid, the pulse fluttering and weak, the visible membranes are darkly congested, the appetite is lost, and the horse stands with his head in a corner, blowing. Cough may or may not be a symptom. If the prescriber is called in at this stage, and not the next morning, he will give a powerful stimulant without delay, recognising the fact that pulmonary congestion is not at first inflammation, but stagnation, engorgement, apoplexy; and if the heart can be roused to pump on the blood at once, all may yet be well. Alcoholic stimulants can generally be had, but can be improved upon if the pharmacy is near.

Half a pint of whisky in a pint and a half of water is not too much for a dose. Or the following :—

Spt. Æth. Nit.	℥ij.
Spt. Ammon. Arom.	℥j.
Tinct. Opii	ʒij.
Tinct. Digitalis	ʒij.
Aq. ad	℥xx.

M. ft. haust.

We recommend the following ball:—

Ammon. Carb.	ʒij.
Camphoræ	ʒij.
Pulv. Opii	ʒss.
Pulv. Anisi	ʒiss.
Glycerini	q.s. ut ft. bol.

Statim sumendus.

The ball may be 'washed down' with the following draught:—

Mist. Spt. Vini Gallici (B.P. 1898)	℥x.

Hot water should be applied, as in cases of pneumonia and pleurisy, without delay; or in the case of heavy-coated or hairy subjects, lin. camph. co., or lin. camph. co. et lin. saponis partes æquales, may be applied.

In congestion of the lungs, where the pulse is oppressed and beating rapidly—from 80 to 100 a minute—a good smart bleeding and stimulants are often effectual. In chest complaints, and more so when there is an effusion, the horse never seeks to lie down; in the ox and cow the reverse is the case. Clipping of horses is advisable, as it prevents epizootics, influenza, congestion of lungs, colds, and hydrothorax in chest diseases. The animal should have a roomy, well-ventilated box—on the cold side rather than the hot; the extremities should be kept warm by hand-rubbing and bandaging the legs and pulling the ears, and the body should be covered with hoods and rugs to induce surface warmth. If the patient does not rally, the stimulants may be repeated every four hours, or at even shorter intervals. If the animal is going to die, the legs and ears will get colder, the flanks move more rapidly, the head hang low or be poked out, while the nostrils dilate and the increasing look of anxiety in the horse's countenance will tell its tale even to men who know nothing of pulses and Pharmacopœias. The patient stands generally till he falls to rise no more, and a black bloody matter runs out of the nostrils. The lungs if examined will be found black with engorgement, and feel like liver to the touch instead of the light elastic material of healthy lung.

The cases that rally do so as a rule very quickly, and with few of the bad results that accompany sore-throat, bronchitis, or pleurisy. It is, as we have explained under Pneumonia, quite a different part of the lung apparatus which is affected. Condition powders, if not made of mill sweepings and rubbish, but of pot. nit. and flor. sulph. with antimony and ground aromatic seeds, help a horse very much to carry off effete material while he is being trained or conditioned, but such medicaments should not be given indiscriminately. Horses do not require drugging all the year round, but may be greatly helped by the judicious administration of medicines when making sudden changes in their mode of life or diet. The old practice of preparing a horse for conditioning by a physic ball first, and giving him another before turning out or soiling, has experience to recommend it.

Fever.—Simple undefined or sympathetic fever occurs as a symptom of other disorders ; it accompanies inflammation of internal organs, and follows severe injuries; frequently, however, it appears as a primary affection, without any local disorder. It is customary to speak of catarrhal, gastric, and bilious fevers. These are merely cases of simple fever with a local complication. In one case, there is a local derangement of the air tubes ; in another, of the digestive apparatus, not as the cause, but as the effect of the fever.

Under the name of influenza, fever is frequently met with in the horse. Cases are generally caused by cold, run a definite course, and terminate in a quick return to health. In fever we have increased heat, a rapid pulse and breathing, with arrested excretion and secretion. In the first stages there is an irregularity in the circulation; this is as far as a number of cases ever get, as a good stimulant and a little care produce a healthy reaction.

Sympathetic fever was at one time very common as the result of wounds, bruises, etc., and carried off many valuable animals, especially when the wound was in the hind foot or leg. In the treatment of wounds, therefore, care should be taken to prevent the development of febrility. Practically speaking, there are eight kinds of fever—viz., mild, toxic, congestive, inflammatory, asthenic, nervous, septic, and typhoid. Each must be treated according to its symptoms, and more than one may exist together, so that care must be observed in the treatment. A good *Fever-draught*, such as the following, may be given with safety in any form :—

Potas. Chlorat. (vel Nitrat.) . .	ʒiij.
Spt. Æther. Nit.	℥j.
Liq. Ammon. Acet.	℥iv.
Tr. Aconiti (Fleming)	♏vij.
Aquam ad	Oj. M.

Stock fever-draughts should contain an alcoholic or ammoniacal stimulant, a sedative, and a tonic. The effect of alcohol, after the primary diffusion of blood to the surface, in itself a desirable result, is to reduce the bodily heat. Ammonia or digitalis, by increasing the force and diminishing the frequency of the heart's contractions, helps in the same direction, and some bitter tonic carries on or sustains the good work; hence the esteem in which a good 'fever-drink' is held by practical horsemen, who know when to give it. Here are two good formulas :—

Æther. Sulph. . . .	ʒiv.	Spt. Ammon. Arom. .	ʒvj.
Tinct. Digitalis . . .	ʒij.	Tinct. Card. Co. .	ʒvj.
Tinct. Gent. Co. . .	℥ij.	Tinct. Hyoscyam. .	ʒiv.
Aq. Menthæ Pip. ad . .	℥xij.	Spt. Æther. Nit. .	℥j.
M. ft. haust.		Aq. Chloroformi ad .	℥xv. M.

Care should be taken not to give an ordinary dose of aloes in violent fever, as super-purgation frequently results. Four ounces of linseed oil or sulphate of magnesia is preferable; or good effects may be relied on by giving carbonate of ammonia in two-drachm doses twice a day. The body should be well clothed; fresh air and cold water allowed *ad lib.* Green food and boiled barley and linseed are much better than a continuance of bran mashes, which only act as a laxative from being indigestible, and so do not support the system.

Sunstroke.—Excessively hot weather and heavy pulling of loads at such times induce sunstroke. The horse falls down and shakes his head in distress. The trouble is relieved by cold affusion, and a two-drachm dose of potass. brom. with half a drachm of liquor strychninæ. In obstinate cases a mustard blister near the region of the heart is useful.

Mud Fever.—The disease known among horse-owners as mud fever is more or less of a regular visitor in winter time in both town and country districts, and the conditions which bring it about are not very clear. It is more frequently the scourge of the gentleman's than of the poor man's stable; while most diseases find a home among the ill-cared-for and ungroomed, this is an exception, and it was as if by accident that the remedy, or rather preventive, was discovered.

In 1871 many London horses died, and so aggravated a form did the trouble take that many firms were unable to horse their vehicles, and great inconvenience and loss resulted. Someone then observed that night-cabbers and other horses that are put away dirty escaped, while the carefully washed and bandaged horses were laid up. It was found that when the hair was left on the lower parts of the limbs, and the dirt was left on the hair till *dry*, very few cases of mud fever appeared; since that time the custom of clipping down to the elbows and nearly to the hocks has become much more fashionable, and is adopted by many without knowing the reason. Still, with all precautions, mud fever is met with every winter. Metropolitan vets. said the tram companies were to a great extent responsible, as they put down salt to make the track clear when frosted, and the salt increases the irritating power of the mud. This may be so; but horses suffer that have never been in a town at all, and on chalky or clay soil alike, so that many horsemen think the disease comes from within, and is but a local manifestation of a systemic condition.

The horse, be he carriage, hunter, or other breed, comes in all plastered with mud, and is washed, dried (more or less), and put away for the night; if badly attacked he will be feverish and off his feed in the morning, stiff behind, and sore to the touch all down the front of the hind legs, and often all along the belly; the hair comes off very quickly, and the outer skin, or cuticle, desquamates to such an extent as to leave a raw surface and great tenderness. Sometimes there is great swelling of the hind legs, the front ones participating to a lesser degree, and the belly is often much swollen right along to the posterior portion of the sternum. In very bad cases the whole surface assumes a confluent condition, and the constitutional symptoms are proportionately severe; the thermometer registers 104° to 105° F., and the animal rapidly becomes emaciated.

The treatment should be directed to reduce the pain and irritation, and prevent the malignant condition above described; to lower the temperature and restore appetite, and make the horse sufficiently comfortable and supple in his limbs to lie down on a good bed. First, foment with a lotion composed of glycerini Oss., aquæ Cj., at a temperature of about 100° F.; and having with this softened off—and not rubbed—any adhering dirt or serosity, carefully dry the parts with a very soft towel, or lint, and apply one of the following lotions:—

Acidi Carbolici	ʒj.
Glycerini	℥ij.
Aquam ad	Oj.

M. ft. lotio. Ter die utend.

Acidi Carbolici . .	ʒj.	Liq. Plumbi Subacet. .	℥j.
Ol. Sesami . . .	℥x. M.	Ol. Lini . . .	Oj. M.

Applic. omni die.

All the foregoing are well-tried and old friends of good veterinary surgeons. The third has been much favoured in the South of London in ordinary cases, and the carbolic forms when there is a tendency on the part of the skin to slough.

The benefit of bathing the inflamed parts with very much diluted glycerin can be scarcely credited by those who have not used it, and we know of a celebrated lotion which is composed of this only, with a little liquor rosæ, with elaborate directions as to the use of rain-water with it, and so on.

As regards internal remedies. If the fever runs high, doses of 15 to 30 minims of tincture of aconite (B.P.), with chloral hydrate ʒij. or potassium bromide ℥ss., twice daily. If there is constipation linseed mashes or tea should be ordered, but no aloes given, or other purgatives stronger than mag. sulph. ℥iv., c. pulv. fœnug. ℥j., or other spice, to induce the horse to eat it. With the abatement of fever small doses of tinct. opii and spt. æth. nit., ℥ss. of each, may be given ; or, if a ball be preferred, give pulv. opii ℈ij., ammon. carb. ʒj., lini farin. q. s. ut ft. bolus, bis die. A little daily exercise should be enjoined, however stiff and unwilling the horse may be to move ; carrots, bran-mashes, etc., in small quantities to tempt the appetite and regulate the bowels ; and on returning to work a good coating of the liq. plumbi and oil lotion. Some tonic powders in the daily food will help to get the horse into condition again. The following is a good recipe :—

Sodii Chlorid.	ʒij.
Pulv. Fœnug.	ʒij.
Pulv. Gentianæ	ʒij.
Pulv. Ferri Sulph.	ʒj.

M. ft. pulv. Nocte maneque c. cibo.

To prevent a recurrence of the disease, the legs should not be clipped, and the mud should be allowed to dry and then be brushed off. Washing should be strictly prohibited.

Scarlatina, or **Scarlet Fever,** is a disease characterised by an eruption of minute scarlet spots on the mucous membrane, with soreness of the throat, and at times by suppuration at various parts. It is non-contagious, and often makes its appearance after an epizootic disease has been prevalent. Soreness of throat and scarlet blotches are sure symptoms, swelling of belly and legs, painful to the touch, loud moist cough, enlargement of thyroid and maxillary glands, and usually, when everything goes right, the soreness of the throat and eruption gradually disappear by the ninth or tenth day. The animal is very thin and emaciated, and requires careful attention to prevent any complications.

Treatment.—Warmth, pure air, laxative food, and febrifuges, such as potassium chlorate, sodium hyposulphite, potassium nitrate, etc. Poultice the throat, steam head. Gargle with sodium hyposulphite, vinegar, alum, etc. A dose of spirit of nitrous ether may be given if the throat permits. Do not exercise the animal until it is thoroughly convalescent and all danger of a relapse is passed. In severe cases, where choking is imminent or threatened, tracheotomy must be performed.

Purpura Hæmorrhagica is another eruptive non-contagious disease or fever; it is of an intermittent type, and does not usually follow an epizootic, as scarlatina does. It is very like the last-named, but the sore-throat is absent and the petechial patches are purple in colour and are more diffused, and the swellings of the limbs terminate abruptly, as if a cord had been tied round them.

The symptoms are petechial spots of a purple or dark hue on the mucous membranes. Sometimes there are discharges of blood, swellings of the lips, legs, belly, and any depending part—very hot to the touch and painful; cracks or fissures about the flexures of the legs, and the skin may slough off. A cough of a hoarse character greatly helps to differentiate it from scarlatina. The fæces are usually dry and hard, but diarrhœa is easily brought about. Urine is highly coloured, has a strong odour, and contains more solid matter than usual.

Treatment.—Pure air, light, and warmth are essential, with astringents internally. Tincture of perchloride of iron or turpentine oil and linseed oil in first stages. Ergot of rye, extract of hamamelis, potassium chlorate in drinking water, or anything that will tend to oxidise the blood. Carbonate of iron is very good. Hypodermic injections of adrenalin, and potassium and mercuric iodides, are also recommended. Stimulants must be cautiously administered: spirit of nitrous ether is most suitable. Sponging of the external swellings and nostrils should be done twice a day at least, with solution of alum, vinegar, iron, etc., and either cold or hot water as occasion requires.

Dentition Fever.—During the active stages of the process of dentition, between three and four and a half years, the animal is very subject to what is called dentition fever. He is very dull and dejected, run down as it were, off his food, with staring coat, indigestion, increased pulse, and general emaciation. This is due to the cutting of so many teeth at one time: eight permanent molars and four permanent incisors—twelve altogether. The mouth is red and inflamed, tender, and there is an increase of the flow of saliva.

Treatment.—Lance the gums if necessary; put the animal off work; give a slight purge, and follow with fever mixture. Remove any milk teeth if they prove an obstruction.

Strangles.—A disease of colthood. The chief symptom is a swelling under the jaw, which increases until the formation of pus and the pressure within make a thin place where the abscess is said to 'point.' There is often a great amount of constitutional disturbance and high temperature. *Febris pyogenica* is the scientific name. The disease is now known to be due to a streptococcus, and is usually much mitigated by hypodermic injections of antistreptococcic serum. The ordinary local treatment must of course be continued. This consists in forwarding the pus formation and inducing it to come to the surface. When a soft place or prominent one is felt the lancet is to be boldly plunged into the abscess and the matter liberated. It is often very thick and may need some manipulation to get it out. The introduction of a little ol. tereb. et ol. olivæ, partes æquales, will facilitate the discharge, after which the abscess commonly heals with rapidity. Poulticing is seldom practicable, as the disease occurs most often with youngsters at grass, and it is better to prescribe a stimulating liniment, such as lin. alb. vel saponis, and advise trough feeding with soft foods, like linseed and bran mashes. A tonic of iron and gentian is found very useful in restoring strength when the pus has been liberated, the disease being very debilitating and sometimes causing death from rupture of secondary formations into the chest.

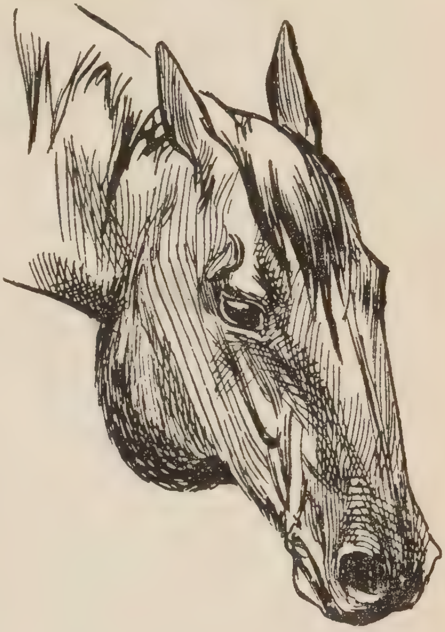

FIG. 9.

STRANGLES: SHOWING THE SWELLING UNDER THE JAW.

In Australia 'strangles' is regarded by horsemen as highly infectious. The treatment prescribed above is usually adopted and is most successful.

Another plan is to steam with bran, adding some odorant, such as tar, eucalyptus, or carbolic acid, opening the nodes as they point, and using as a dressing :—

Iodoform	ʒj.	
Resin ointment	℥ss.	
Lard	℥ss.	Mix.

Bastard Strangles is a term sometimes applied where multiple abscesses form, and at other times is used to describe inflamed glands and catarrhal symptoms in seasoned horses, which often threaten to develop into genuine strangles. Professor Williams gave the term to that more severe form of strangles in which multiple abscesses are formed and other glands often affected besides those in the submaxillary space.

Treatment of abortive or bastard strangles should be carried out on the same lines as those previously described for the infantile form, but with such modifications as may suggest themselves to the observant horse-master. When the abscess has been evacuated, patients benefit by tonics, and the most convenient form is that of a powder in the food, such as the following :—

Cupri Sulph.	ʒss.
Ferri Carb. Sacch.	ʒj.
Pulv. Fœnug.	ʒj.
Pulv. Gentianæ	ʒj.
Sodii Chloridi	ʒij.

M. ft. dosis. Semel die c. cibo.

Antistreptococcic serum should also be injected. Light diet, gentle exercise, regular grooming, demulcent drinks, such as barley-water or water mixed with honey and powdered marshmallow or liquorice, are accessories to the treatment. The horse should be kept in a good roomy loose-box, with plenty of fresh air and light : he should also have clothing and bandaging if the weather is cold.

Shivering.—This term does not apply to rigors or the shivering fits which usher in febrile complaints, but is used to denote a serious affection of the spinal cord. It is the analogue of chorea in dogs, and comes on during colthood almost always, though similar symptoms are known to follow injuries to the spine and the meningitis of influenza. It is nearly always incurable, because due to some lesion of the spinal cord. The symptoms often do not display themselves until a horse is required to back a load in coming downhill, but in bad cases horses will stand still and shudder or shiver, with a sort of general spasm of the body and rigidity of the limbs. It passes away again quickly, but such animals are unsound and sooner or later become incapable of lying down and finally of getting up when they fall down in sleep.

Megrims.—The pathology of this most dangerous disease of the horse is not very clearly made out. Some hold the theory that the fit is caused by an apoplectic condition of the brain, while others suggest anæmia of that organ as the cause. In its manifestation it more nearly resembles epilepsy than anything else.

There is nothing in the examination of a horse that will enable a veterinary surgeon to diagnose megrims. The animal will appear to be perfectly well, even if sold on a short trial; but one day the fit will come on when he has been out for some time; he stops suddenly, shakes his head, sways his body, and even falls down in bad cases, but the fit does not usually last long, and if nothing is broken he will resume his journey apparently only dull and depressed in manner. It is commonly harness horses that suffer from this disease; and warm weather, uphill work, and tight collars contribute to bring on a fit. A 'piped' collar should be used.

Bleeding, aloetic purges, and bran mashes are commonly recommended; but a horse subject to megrims is a dangerous creature, and the owner will save himself loss by an early sale—to a stranger. Bleeding from the jugular vein is more beneficial than from any other part: it should be copious, and the blood should flow freely.

Sore-throat.—Acute inflammation of the throat sometimes causes suffocation, when it arises from an abscess formed in the vicinity of the throat at the back of the tongue, as in strangles. Do not bleed on any account. Linseed poultices should be placed on the throat, and barley-water, sweetened or acidulated, given as a drink or as a gargle. Milk diet should be provided without delay. The following is another method of treatment:—Make an electuary of 1 part each of nitre and sal ammoniac, and 2 of Glauber's salt with water and meal. Smear on the tongue five or six times daily a quantity twice the size of an egg. Or the electuary—belladonna and camphor—on p. 38 may be given. Rub the swollen parts three or four times daily with a mixture of 2 parts each of mercury and marshmallow ointments with 1 part of camphor ointment. Protect from chills, and give only warm water to drink.

In badly ventilated stables sore throats of a more or less malignant variety pass through the ranks, and for these a gargle of potassium chlorate and hydrochloric acid should be prescribed, and an electuary containing ten to twenty grains of extract of belladonna, a scruple of potassium chlorate and of potassium nitrate in each 'dose,' which may be placed on a bone spatula and put on the tongue as far back as one can conveniently reach. In poor men's stables, where very little nursing can be obtained and poulticing is badly done, if attempted at all, it is best to prescribe a sharp counter-irritant at first, such as lin. tereb. co., or mustard with vinegar or a few drops of turpentine to sharpen it up.

Stomach Staggers, or **Grass Staggers,** is an affection of the brain caused by impaction of the stomach. It is commonest among young and middle-aged animals at grass in the autumn.

Symptoms.—Dulness, disinclination to move, fulness of the abdomen, perhaps distension and constipation ; breathing slow and heavy, pulse slower than usual, 30 to 35 a minute instead of 40. Walking with the head down, almost to the knees, is a not uncommon symptom. There are a staggering gait, weakness over the loins, and no power in the hind quarters. It comes on suddenly, and soon ends in death or recovery.

Treatment.—If discovered in time a brisk aperient is usually effective, but profuse bleeding from the jugular vein is even more rapid in removing the brain pressure, for it is in the cerebral vessels that the trouble is displayed, though primarily caused by engorgement of the stomach and bowels. Physic ball and pot. iod. or pot. brom. powders in laxative food ; also withdraw all corn and hard food.

Sleepy Staggers, a similar disease, comes on gradually, runs a slower course, and is not attended by the marked fulness and constipation of stomach staggers.

Treatment.—As the stomach is packed with food, balls and powders can hardly be assimilated. Strong solutions should therefore be given. The horse cannot vomit, so relief must be obtained through the bowels. Give several doses of magnesium sulphate in a good deal of water. Abstinence from food for some time must be enforced, and when again fed it should be from a manger or rack. Horses liable to staggers should never be turned out to grass, as the pendent head is provocative of a return. Salines are especially useful in combination with one or two small doses of aloes, as the latter in small doses is diuretic, while salines by osmosis more rapidly deplete the system than anything. Bleeding is recommended to relieve the acute symptoms in the first place—the saline takes up the running and prevents the increase of temperature and blood-making which follows blood-letting—a circumstance which renders bleeding so seldom desirable except in certain acute cases.

'Wheat.'—In Australia horses and cattle often get at the farmers' stacks of wheat, or into their growing green crops. This food they eat voraciously, with bad results. The symptoms produced are flatulence, distension, and sometimes scouring, and then excessive pain as in colic. A frequent secondary symptom is paralysis of the muscles, with inability to move. In the case of cows the ordinary treatment, consisting of doses of sodii bicarb., carbo. lig., and spt. ammon. arom., often relieve. In horses 1 to 2 oz. of liq. sodæ chlorinat. or liq. calcis chlorinat. in warm gruel acts as an antifermentative, and quickly relieves distension. In severe cases, with extreme irritability of the stomach and bowels, bismuth. carb. and spt. ammon. arom. act as a corrective, stimulant, and antispasmodic. The paralysis is relieved by rubbing and hot applications.

Cystitis, or **Inflammation of the Bladder.**—*Symptoms.* Cording of back, straddling of the hind legs and posturing for urination without result, and, in the case of males, frequent partial unsheathing of penis ; thirst, movements of the tail ;

the horse turns to look at its flanks. A high degree of fever accompanies the malady ; quick, small, irritable pulse, and distressed countenance. There is an indisposition to lie down though rest is needed. This disease is liable to be mistaken for laminitis, as the animal's behaviour is very similar when the hind feet are affected, arching the back and standing 'all of a heap as though made in one piece.'

Treatment.—Clysters act as internal poultices and should be frequently thrown up the rectum. They may contain glycerin and some extract of belladonna. For internal use, too, there is no drug which acts so well as belladonna on the urinary organs when inflamed. A first dose of an ounce of the tincture may be given and followed up three times daily with two-drachm doses, regulating the amount and continuance not only by the condition of the patient but by the effect upon the pupil of the eye. If the latter is found much dilated and unable to contract in the presence of a strong light, the medicine must be stopped. Give mucilaginous drinks and clysters, and apply to the loins a poultice of warm salt or sand, both of which retain the heat much longer than bran. A warm sheepskin placed over the loins and hips, and small doses of digitalis, prove beneficial. The bladder may be emptied by means of a catheter, an operation which requires experience. As the patient improves give bitter decoctions. When the inflammation is due to stone in the bladder, the cause can only be removed by operation.

Eczema.—The skin diseases of the horse commonly called eczema are, in reality, distinct affections, but have in common the production of minute vesicles which break, and by coalescing form a serous mass or scabs. It is a raising of the cuticle from the true skin in vesicles or blisters. It may be simple or red or complex. It is not contagious, but often occurs upon several animals in the same stable from an error of diet in which all have shared. The most severe form in the horse is pustular eczema or impetigo, as seen in several kinds of grease.

Treatment.—Purge, change of food, especially to green-meat and carrots, poultice, washing with soap and dressing the sore places with ung. zinci or ol. carbol. 1 in 25, or acid. carbol. 1 part, glycerin. 2 parts, aq. 20 parts, or zinc. sulph., cupri sulph., argent. nit., or even the actual cautery, with a few alterative powders, will generally effect a cure; or the following lotion may be applied every third day:—

Spt. Picis	℥j.
Paraffini	℥iij.
Ol. Cetacei	℥v.
Sulphur. Nig.	℥j.
Liq. Potassæ	℥j.
Aquam ad	Oj. M.

Mallenders and Sallenders.—A skin trouble which comes in the flexures of the knee and hock (behind the former and in front of the latter; *see* illustration, p. 76) is often described as a form of eczema; the horseman's name being 'mallenders' when affecting the fore limb, and 'sallenders' if a hind one is implicated. This affection is really on a par with cracked heels (*see* p. 151), the parts being provided with more or less glandular structure, whose office is to keep the skin soft and unctuous where friction would arise from the bending of knees and hocks. When, from the irritation of dust or mud, these are inflamed, we get the results described under cracked heel. The disorder would seem to be associated with some constitutional disturbance, and become chronic, and, for this reason perhaps, has been classed as eczematous. We have known horses to whom the discharge seemed to have become necessary, drying up being followed by some congestion of the foot and more or less lameness.

Treatment.—An aloetic ball, where circumstances permit, followed by alterative powders in which pot. nit. or pulv. resinæ has a prominent place. As an ointment, hamamelis and vaseline, or a dilute ointment of red iodide of mercury, or ung. zinci ox. with acid. carbol. ♏x. ad unciam. Quite recent cases may be dried up and lastingly cured by a more astringent ointment, as alum. exsic. ʒj. to mel. exot. ℥j. The most successful of all external remedies in our experience is ung. hydrarg. nit. If applied in the first instance it seems to cut short the attack, or 'kill' the disease, and in chronic cases, with a lot of thickening, reduces the disfigurement and brings about a healthy state of the parts.

Pityriasis is a condition of the skin resembling bran —small scales, without a visible vesicle or other antecedent eruption, form in great numbers and produce a very unsightly condition. It is often caused by poverty, and both horses and cattle are affected by it at the end of the winter.

Treatment.—Change of food, alteratives, and oily dressings. It is said to be the result of incomplete oxidation of the carbonaceous principles of the food, and hence it is advisable that all starchy and sugary foods should be withheld. We have known bad cases cured, when other remedies had failed, by the daily application, warm, of the sulphurated potash lotion given on the next page.

Prurigo, or **Pruritus,** is a scientific term for an irritation of the skin that cannot be made to fit in any of the squares which an exact system of nomenclature would design for it. In veterinary practice such cases are frequently met with, and no cause can be assigned, and too often no remedy is found We use a good many long words in connection with skin diseases, but our knowledge of dermatology is very meagre, and the treatment empirical. If no definite disease is to be found to account for a violent itching, and no parasite can be accused of the mischief, it is well to give remedies that have a distinct action on the skin, like antimony, sulphur, pot. nit., etc., and apply a sedative lotion such as either of the following :—

Liq. Potassæ . . .	ʒj.
Acid. Hydrocyanici Dil. .	ʒss.
Aquam ad	Oj.

M. ft. lotio. Sæpe utend.

Lysolis	℥ss.
Aquam ad . . .	℥xxv.

Misce.

Pruritus may be successfully treated with the paraffin lotion recommended for eczema (p. 127). Another very good and cheap lotion is—

Acid. Hydrocyan. Dil.	ʒij.
Aquam ad	℥xvj. M.

Apply to the parts daily.

A lotion that has sometimes succeeded when all others have failed consists of—

Potassæ Sulphuratæ	℥iv.
Glycerini	℥viij.
Aquæ Pluvii	Cj.

M. ft. lotio.

The animal's skin is previously prepared for this application by washing in an alkaline water, such as a packet of Hudson's Extract of Soap in a bucket of warm water, then partially cleared with a scraper, and the lotion brushed on with a water-brush.

Itchy Tail.—This is a form of prurigo which spoils the appearance of many a horse, and he who prescribes successfully for it will earn the gratitude of both master and servant. No doubt in many cases it is nothing more than a vicious habit, but it has its origin in some irritation of the tail or the rectum, and often ceases when the latter has been cleared of fundament bots or of those small round worms which haunt the terminal portion of the intestinal canal. Treatment should not be despaired of until the prescriber is quite assured that no parasites are present. We have known many cases relieved for a considerable time by first washing the tail thoroughly with soft soap and abundance of water, and then applying the sulphurated potash lotion. Some mercurial ointment should be inserted in the rectum, and an injection of salt—2 oz. to a quart of water—used at intervals of a few days.

Acne, or **German Measles,** in the horse is a pustule which occurs in the mane and occasionally in the tail; the rubbing of the collar either produces or favours the seat for the parasite which causes it. It works its own cure when it breaks, but a little ung. resinæ favours the healing process. The collar should be kept off the place, and this may be done oftentimes by tying the harness to the saddle pad, since it is in going downhill that the collar jolts upon the mane. It is sometimes necessary to give the horse a holiday for a few days.

Of late years there has been a very troublesome form of this malady, known among jobmasters as German measles because introduced from the Continent. It begins under the harness, but often spreads along the back and over the poll, the withers, shoulders, tail, etc., making the horse very unsightly and causing much annoyance.

Treatment.—The best of all remedies is that of sweating in several rugs while calling upon the animal for severe exertion; dressing with a cresol ointment while still wet, and the daily administration of flor. sulph. in doses of an ounce or more. This exhales through the skin and makes the host untenable after a time.

Surfeit, or **Nettle Rash,** is a name given to an eruption of the horse's skin which is not parasitic or contagious, but appears to arise from acute indigestion, from chills, drinking cold water when hot, etc., and generally occurs when the coat is being changed. In the form known as urticaria it will sometimes appear in a few minutes, lumps coming up the size of a hazel-nut along the neck, shoulders, and sides, and disappearing again almost as quickly. The more common form of it is not so sudden either in coming or going, but the lumps are hot and irritable, and the outer skin or cuticle desquamates and leaves scaly semi-bald spots or else a growth of white hairs.

An aloetic purge of from four to eight drachms should be given, if the horse can be spared for two or three days from work, or alteratives in the case of a seven-day cabber. The alterative powders in common use are sufficient—sulphur and nitre affecting the skin very quickly and carrying off effete material by the diuretic action of the latter. It may here be remarked that vicarious function is more readily excited in horses than in other animals, and even in health the urine of the horse is often loaded with material which precipitates immediately on contact with the cool air.

If the horse is disposed to bite himself (or his clothing) and rubs the stall-posts, it is well to apply the following lotion :—

Acid. Hydrocyanici Dil. . . .	ʒj.
Liq. Potassæ	℥ss.
Aquam Picis ad	Oj.

M. ft. lotio. Sæpe utend. si opus sit.

Nasal Gleet is a discharge from the nostrils, sometimes continuous but oftener intermittent. It is general from one nostril ; it is often the sequel of severe colds, and in that case the discharge is usually from both nostrils. It is, however, invariably due to irritation and disease of the sinuses, catarrhal inflammation, external injuries, diseases of the bone and teeth (usually the fourth molar), formation of pus, etc. Symptoms are discharge from nostrils (usually one), more so when animal hangs down its head, generally ill-smelling, due to diseased teeth, and more watery and not so glue-like as in glanders ; often swelling of jaw, bad breath, etc.

Treatment.—Wash out with carbolic acid solution or suchlike, and administer by insufflation three times daily :—

Pulv. Opii,	
Iodoformi,	
Zinci Oxidi,	
Acid. Boric.	āā part. æqual.

Also give one of the following powders morning and evening in food :—

Cupri Sulph.	℥iij.
Acid. Arseniosi	ʒj.

Div. in pulv. xij.

If there is no improvement, trephining must be resorted to, as no doubt there will be disease of the bone or lining membrane of the sinus. A careful examination of the teeth should always be made. Trephining should only be done by a qualified man, as it is not an everyday operation. The bowels and general health of the animal require careful attention, and every care should be taken to keep it in good condition.

Tumours, or **Polypi,** are often found on the tonsils and fauces, and cause symptoms of choking, difficulty of breathing, flow of saliva, almost continuous efforts to cough, and often roaring when pushed.

Treatment.—Remove the growth by any of the ordinary surgical methods. A gargle of astringent lotion should be given frequently, or if at all accessible the parts should be painted with solution of silver nitrate.

Worms in Horses.—The intestines of the horse are infested by different kinds of worms, of which tapeworms are rarest, and ascarides, or round worms, commonest. These latter are usually located in the stomach and intestines. When in large numbers they are voided at times with the fæces, and this and the poor condition of the animal are the two most prominent symptoms of their presence. The absence of worms in the dung is not proof positive that an animal is free from them. In this case we can only diagnose negatively, by the poor condition and absence of any other cause. The most effectual remedy is a good dose of aloes, given on an empty stomach. This often removes the parasites, but as the patient is probably weak a little tonic medicine is required, a very good form in such cases being—

Santonini	ʒxij.
Arsenici Alb.	ʒj.
Ferri Sulphat.	ʒxij.

Misce et divide in pulveres xij.

One powder to be given in the corn every day until six are taken; then give a purge, and two days later begin with the remaining powders. Horsemen have an idea that worm medicine is only correct in the form of powders. The tapeworms of the horse are small, and the joints may easily pass out in the dung unobserved. The best remedy is ol. filicis maris, in doses of two or three drachms.

It is unfortunately true that nothing is more uncertain in veterinary practice than worm medicines. The same ball is sworn *by* in one stable, and *at* in another. Like fish, sometimes the worms will bite, and at other times they are off their feed, notwithstanding all the fasting on the one hand or ground-baiting on the other. Some practitioners give 'ground bait' in the form of mashes, and others prescribe abstinence ; but these tricks are often as worthless as fishing from the opposite bank when sport fails on the first side. The only thing to do is to give those remedies that are rough on worms, and, failing on one occasion, to try, try, try again, and patience will generally be rewarded at last.

It is a matter of common observation that the large round worms of the horse (*Ascaris megalocephala*) come away freely in May and June, when horses first get cut green-meat. If the dose of aloes already recommended should not be effectual, the following may be tried :—

Santonini	gr. xx.
Pulv. Vitrei	ʒij.
Antimon. Tart.	ʒj.
Aloes Barb.	ʒij.
Ferri Sulph. Exsic.	ʒj.
Alum. Exsic.	ʒj.
Excipient.	q.s. ut ft. bol.

Bol. j. bis per hebdomada.

This may be given in powder with the exception of the aloes and alum. exsic., though some horses will take them.

If the remedies given should fail, the vendor had better be slow to pooh-pooh the presence of worms, or it may happen that some carter, with the boldness of ignorance, will afterwards give ac. arsen. ʒj. c. antim. tart. ʒij., and bring round half a bucketful of ascarides to show what *he* can do when he chooses. We should not recommend this remedy, though often successful, as we have seen ulcerated bowels, causing death afterwards—a long time afterwards, when no one would believe the real cause of it, and least of all the carter who has 'taken you down a peg' over the worms.

A good and safe plan for the removal of the ascarides is to starve the horse for a night or a day, give tr. opii 2 to 4 oz., followed shortly afterwards by turpentine, tincture of asafetida, and linseed oil. The tr. opii appears to stupefy the ascarides, and the draught has then a better result.

It is not the large round worm that, as a rule, does so much harm to horses, but the strongyles that infest the mucous lining and make nests in it; these and some others are impossible to cast out, as they bore through the intestines and make nests at the junctures of blood-vessels, returning to the intestines to feed when they reach a certain stage; the adults may be expelled when on their feeding-grounds, but the young keep taking their places, and 'the cry is still, they come.'

An Australian correspondent writes that Reckitt's blue is often given for worms by some Australians, and it cures when all other kinds of treatment have failed. The method is to dissolve a packet of blue in a bucketful of water, and stop all drinking water till the horse helps himself from the bucket of blue-water. Worms come away dead. It should be noted that the ordinary blues, which consist of soluble prussian blues and are made with oxalic acid, are poisonous, and the solution should be used cautiously. Sulphate of iron is also recommended, and areca nut in condition powders, preceded by linseed oil 1 pint and turpentine 1 oz.

The following is an extract from an Australian authority's communication on this subject:—

> The opportunities of treating worms in horses, and some other complaints, in strict accordance with the methods prescribed in 'V.C.P.' are very exceptional. We are forced to simplify the treatment and lessen its cost as much as possible to suit the cases and the circumstances. When the ploughing season has come round and the farmer's horses have not yet had the benefit of the spring grass, their condition is low, and as it is imperative their reduced condition must not further suffer from the attack of worms, the chemist in an agricultural district finds at that season frequent demands for worm medicines. The fact that the farmer is

unqualified to give a ball prevents the use of balls. There are a number of horses to go over, and as seasons are bad and the average farmer is short of cash, we are again restricted, and compelled to give something costing little, yet adapted in no small measure to his wants. It is then I prescribe ferri sulph. in bulk, with instructions to the buyer to grind it down and use a teaspoonful with a tablespoonful of common salt in the ed once a day or each alternate day.

That worms affect horses to an alarming extent, and give rise to some peculiar symptoms, is evidenced in the disease known as *Australian Stringhalt*, which differs so much from the orthodox stringhalt as to be readily amenable to treatment in the early stages of the complaint. Advanced stages often defy treatment. Outbreaks of this disease are of frequent occurrence in New South Wales. Other Colonies as well are familiar with it. There has been considerable discussion relative to the cause of Australian stringhalt. Certain weeds of the dandelion type have been blamed for causing it. The New South Wales Government Veterinary, Mr. Stanley, M.R.C.V.S., who has given the subject much study and has thrown so very much light upon it, has proved beyond a doubt that the symptoms are in no way attributable to anything noxious in the way of feed, but are entirely due to worms of the genus *Helminthiasis*. Mr. Stanley says in regard to this little-understood disease :—

> 'It is caused by worms infesting the mucous membrane of the horse's digestive organs, especially the digestive canal, where, by setting up irritation of the bowels, they disturb the nervous system, thereby affecting the nutrition and action of certain sets of muscles, producing inordinate contraction whenever the animal moves ; this I attribute to perverted nervous action, which is aggravated by deterioration of the blood, produced by the ever-increasing myriads of parasites. They are biting, perforating, and bleeding like leeches the highly sensitive mucous membrane during the whole time they are tenants in possession. They not only deteriorate the blood by altering its constituents, but I believe they also, by virtue of their excretions and *débris*, secrete the toxic material which, being absorbed into the circulation, may assist in producing the disastrous effects on the nervous and nutritive system which are so characteristic of this affection.
>
> 'That toxic elements are manufactured in the blood by parasitic organisms is well known to scientists who are engaged in investigating bacteria and other microbes in their relation to diseases. In stringhalt parasitic worms are found in countless numbers, and of several distinct varieties, in the large and small intestines, invading their tunics, making innumerable sores, ulcers, and abscesses, accompanied by the products attending chronic inflammation, thus paralysing peristaltic action. They interrupt the natural nutritive functions of those important digestive organs. They are so overcrowded and voracious that they actually bore

> right through the bowels, and some are found as wanderers in the muscular walls of the abdomen. They stray about to become finally encysted in various places and die, their *débris* creating still further trouble.
>
> 'In passing I wish to note that I consider many of the larger and common worms found frequently in all animals, living on mucous epithelial cells and food in the stomach and bowels, are unimportant, and in this disease, therefore, I exclude them. The arteries are free from strongyli, and I have never seen hæmatozoa in the blood in stringhalt, neither do I find disease in the cerebro-spinal organs. There is discoloration in the blood-vessels, which is due to impure blood; the cerebro-spinal system is only temporarily deranged.'

The treatment which Mr. Stanley advocates consists of purgatives, anthelmintics, and tonics, with change of locality, water, and food. Horse-owners beyond the reach of veterinary skill are advised to trust to nature, and assist by simple means, such as change of pasture and water, give good, wholesome food, and keep from infected paddocks. Common salt 1 oz. daily, alternated with a drachm of sulphate of iron; also a purgative two or three times a month, composed of turpentine 3 to 4 oz. mixed with a pint of olive or other oil. That Mr. Stanley is correct in his opinion is evidenced by the success attending the treatment he prescribes, to which I can testify from experience gathered during a serious outbreak a few years back. In the treatment of worms in horses, dogs, and fowls, thymol has been used with great success, it being far more reliable than santonin. The dose is 10 to 15 grains dissolved in 1 oz. of spirit and given in milk, followed by a purgative.

Bots are the larvæ of a gad-fly (*Œstrus equi*). The eggs of this fly are deposited upon the legs, etc., of the horse, and are taken into the stomach by the horse licking himself. The larvæ escape from the eggs, and fix themselves to the mucous lining of the stomach, where they remain during the winter. The following summer they let go their hold, and are removed along with the fæces.

Another variety, known as the 'fundament' bot, is found just within the anus, the fly depositing its eggs while the horse at grass is in the act of defæcation and the folds of membrane are momentarily exposed. The presence of these is often the origin of itchy tail (*see* p. 129). They are best got rid of by hand picking—an operation both tedious and unattractive, but the results are worth the trouble. It is thought by some that the introduction of ung. hydrarg. is inimical to their existence, and it is as well to provide the stableman with some of it, as he will the more likely persevere in the use of his fingers if supplied with an unguent calculated to make the parasites loose their hold. No medicine will totally destroy stomach bots, but a very useful draught is ol. terebinth. ℥ij. given in ol. lini Oj. Carbon bisulphide in one fluid drachm doses, enclosed in gelatin capsules, has a reputation for killing bots. An injection of solution of salt or of lime-water is useful for exterminating bots in the rectum.

In Australia the belief exists that bot fly is credited with much more damage than it is responsible for, and farmers there are conceited about their own cures, such as, in one case, bleeding the horse in the mouth, and in others tansy tea. Disinfection of the mangers with carbolic washes, and of the horse's chin (where the eggs are located) with liq. hydrarg. perchlor., should be carefully followed. Thorough grooming and strict attention to cleanliness are essential. Mineral and vegetable tonics should also be administered. In spite of all, an American professor of cattle pathology has said that 'the opinion that bots eat through the stomach is a mistake. The rupture is due to over-distension. Bots are harmless, and no so-called remedy can remove them. They come and go at certain periods of the year.'

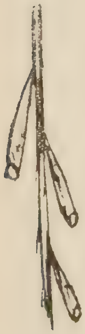

FIG. 10.
Eggs of Bot Fly on Horse's Hair Magnified).

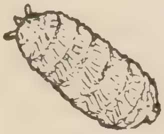

FIG. 11.
Fundament or Red Bot (Magnified).

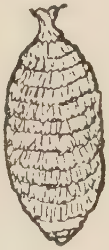

FIG. 12.
Stomach Bot (Magnified).

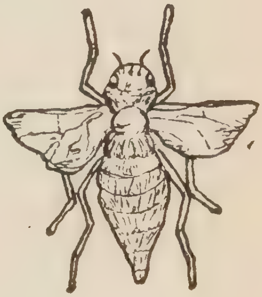

FIG. 13.
Female Bot Fly (Magnified)

Glanders is the greatest scourge known in the equine world. It is as old probably as civilisation, and was described two thousand years ago by Hippocrates. It is an infectious disease, and always present in some large cities with old and insanitary stables. The symptoms are chiefly : Discharge from one or both nostrils, frequently one only, and that the left—at first watery, and seldom recognised as of any importance, afterwards becoming glutinous and lastly pus-like ; loss of condition, staring coat, inappetence, glandular swelling under the jaw, cough, scalded nostrils, ulceration of the lining membrane of the nose, lumps upon the skin, most often on the inside of the hind legs, front legs, and about the head in the order in which we have placed them. Some or all of these symptoms may exist, and a veterinary surgeon should always be consulted in any case the least suspicious. 'Mallein,' which is an extract of the products of the bacillus of glanders (*B. Mallei*), is now employed in diagnosis. It is injected subcutaneously, and (in the case of glandered animals) causes a rise of temperature and characteristic swelling. This substance has proved of the utmost diagnostic importance, but only an expert can appreciate the exact value of the reaction or certify to the authorities. *No treatment is lawful in the United Kingdom, but that notice is required to be given where a horse is clinically affected.*

Farcy.—Veterinary surgeons are unanimous as to glanders and farcy being one and the same disease, and due to the same micro-organism—viz., *Bacillus Mallei.* The counter prescriber should very clearly understand that he ought not to be a party to the treatment or keeping alive of an animal affected with farcy. The Privy Council in 1899 issued very stringent orders in this connection, particulars of which can be had free on application to the Board of Agriculture and Fisheries, Whitehall Place, London, S.W. It is important to note here the fact that most horse-owners persist in calling a swollen leg by the name of farcy, or 'water farcy,' or 'fassy.' This malady is perfectly amenable to treatment, as is shown in the succeeding monograph.

Water Farcy is often confounded with farcy. It has no relationship whatever to the latter, is rarely fatal by itself, and may generally be cured in a few days, or at most in a week or two, but is liable to recur. It is an inflammation of the lymphatics (*lymphangitis*), due to irritation of rich food when the animal is not working, and hence its liability to occur after the horse has been standing in the stable during the week-end and having the same amount of food as if it had been working. It is consequently often called 'Monday morning disease,' and is also known as 'Weed,' 'Shivers,' 'Shakes,' and by a variety of other names. Cart-horses and heavy or crossbred animals are common subjects. Its appearance is sudden, and usually ushered in by a rigor (although this is frequently overlooked); the horse may be apparently well over-night and unable to move across the stall in the morning; the leg—for it more often affects one leg than two, and generally the off hind one—is very much swollen, hot, tender, and stiff; the swelling, too, has a more or less defined line, sometimes looking as though a cord had been drawn tightly round the thigh, differing in this respect very much from a farcy leg, which does not pit on pressure as this does; there are no nodules or buds here, though surfeit bumps may coexist and deceive the unwary. It is a common thing to find healthy cart-horses of the hairy-legged variety with bunchy legs, but this is not farcy.

The Treatment most effectual must be directed to 'calling upon those emunctories the kidneys.' Aloes is known to everyone as a purgative in the form of a physic ball, but it is too often forgotten that it is one of the best diuretics, especially when given in solution or in small doses in form of a ball. In the first stage of big-leg or water farcy there is no beating the following draught, unless constipation exists to an alarming extent and necessitates a purge:—

Sol. Aloes (1 in 4)	℥ij.	
Ol. Tereb.	℥iv.	
Ol. Lini ad	Oiss	M.

This may seem a bold dose of turpentine, but we have known more than 4 oz. given to a pony with good effect, and we are now supposing a cart-horse to be the subject of our remarks. This should not be repeated, but the local symptoms should be relieved by fomentation for at least an hour with hot water, into a gallon of which should be poured—

Tinct. Opii	℥j.	
Tinct. Arnicæ	℥j.	
Liq. Plumbi	℥j.	
Glycerini	℥ij.	M.

A cheaper lotion may be made of—

Plumbi Acetat.	℥j.	
Potass. Nitrat.	℥ss.	
S.V.M.	℥iv.	
Aquam ad	℥XL.	M.

The limb should afterwards be encased in woollen bandages put on moderately tight. Diuretics should be continued, as well as the fomentation, for several days, and exercise enjoined as soon as possible ; the difficulty of getting the horse to move at first should not prevent the attempt. A loose-box, if possible, should be obtained, and every encouragement given to lie down by the provision of an ample bed. As a subsequent diuretic we recommend—

Aloes Barb.	ʒj.
Pulv. Resinæ	ʒj.
Sapon. Duri	ʒiv.
Far. Lini	ʒiv.
Excipient.	q.s. ut ft. bol.

Omni nocte.

Water farcy sometimes affects a front leg and one half the surface below the breast-bone, but it has the same defined line and doughy feel whether in one or both hind legs or forward. Where there is reason to suppose that fomentation will be but indifferently carried out, we would substitute for it—

Liq. Plumbi	℥j.	
Ol. Sesami	Oj.	M.

Apply this all over the swollen surface ; it gives much relief. The horse should have bran mashes only until the inflammation has subsided.

Diabetes — Polyuria — Frequent Staling. — Under these names a disease of the horse akin to diabetes in the human subject occurs, but sugar is not present in the urine. It is characterised by extraordinarily intense thirst, and by the evacuation of urine to an abnormal extent. This has been known to amount to from ten to fifteen quarts daily. The animal loses appetite and rapidly becomes weak and emaciated. The condition is most effectually treated by iodine, and the following is advised :—

Iodi	ʒj.
Ferri Sulphatis	ʒij.
Pulv. Gentianæ	℥ss.

Make into a bolus, and give one daily. In very bad cases a dose may be given night and morning, but ordinarily once a day is sufficient. About six doses will generally effect a complete cure. The iodine may be combined with potassium iodide in such a ball as this :—

Iodi	ʒj.
Pot. Iod.	ʒj.
Pulv. Gentianæ	ʒvj.
Glycerini	q.s. ut ft. bolus

One to be given night and morning. Or a powder may be given consisting of potass. iodid. ʒj. and sodii bicarb. ʒiij. The iodine balls should be freshly prepared, and wrapped (but not sealed) in paraffin paper.

Another ball which appears to have a beneficial effect is composed of—

Plumbi Acetatis	ʒss.
Pulv. Gallæ	ʒiv.
Lini Farinæ	ʒiij.
Theriacæ	q.s. ut ft. bolus

One of these balls to be given every night.

The food should also be inspected, and changed if at all possible, as it is well known that the condition is frequently caused by musty hay, kiln-dried oats, etc. A little clay in the drinking water appears to be beneficial by relieving the acidity which prevails in the stomach.

Azoturia.—This is a disease affecting mares and horses when at work, usually after standing a few days. The symptoms are perspiration, restlessness, inclination to lie down, loss of power in hind limbs, swelling, hardness, and cramp of the loins and gluteal muscles and even the muscles of the shoulders, and increased pulse. When down the animal has to struggle hard in order to get up. If water is passed it is black like coal tar. The ailment is due to a hypernitrogenous condition of the blood and system, caused by over-feeding and want of exercise. When exercise is given the breaking down of the nitrogenous matter takes place to a greater extent than usual, the kidneys cannot secrete sufficiently, and oxidation causes the formation of hippuric acid, urea, etc.; hence the cramps.

Treatment.—Put in slings, bleed, give aloes and diuretics, pass catheter, sheepskin over loins and hips. Enemas and stimulants should be cautiously given. Hypodermic injections of morphine and atropine if required. Very light diet, and nothing very nitrogenous. The hypodermic or intertracheal injection of amyl nitrite or arecoline hydrobromide is of great benefit. Apocynum and adrenaline are also favourably spoken of.

SUPPLEMENTARY NOTES

THE following observations are specially pertinent to the horse:—

Bleeding.—Three forms of bleeding or hæmorrhage are seen in the horse, any of which may at times be very alarming and dangerous. They are: *Epistaxis*, or bleeding from the nostrils; *hæmoptysis*, or bleeding from the mouth or lungs; and *melæna*, or bleeding from the anus. Epistaxis is a sign of disease such as glanders, purpura, and catarrhal fevers, or is due to a weakness or rupture of the small blood-vessels of the nose. In some animals hæmorrhage occurs after they cover a few miles of ground with very little exertion. In all cases special inquiry and a minute examination of the animal must be made to find the cause. If due to disease the bleeding is only secondary, and usually disappears along with the disease of which it is a symptom. When it arises spontaneously or without an apparent cause, astringents must be applied locally. Cotton-wool or fine tow, saturated with tinct. ferri perchlor., glycer. acid. tannici, alum solution, etc., should be inserted into the nostrils in the form of a plug, and cold applications applied to the head. Extract of witch-hazel or adrenalin-chloride solution, hypodermically or otherwise, are useful styptics. Tinct. ferri perchlor., acid. sulph. dil., or ferri citras. should also be given internally in strong doses. Hæmoptysis is generally associated with congestion of the lungs and various forms of epizootic diseases, or the accidental rupture of the blood-vessels, which may occur in severe and painful coughing or from weakness of the blood-vessels themselves. Treat similarly to epistaxis, but be sure of your diagnosis, as hæmoptysis is a well-marked symptom of those special cases requiring definite treatment. Melæna is a term used to denote black tar-like evacuations from the anus, but there can be also passage of blood in its natural colour. In the tarry kind some chemical or other changes have occurred in the bowels, while the latter shows the hæmorrhage to be of recent date in the small intestines, colon, or rectum. Melæna is also brought on by weakness of the blood-vessels, by epizootics, and by accidents and extreme pressure in constipation. The treatment is much the same as in the two former kinds of hæmorrhage. Strict injunctions should be given to keep the animal quiet and free from excitement. Absolute rest should be insisted upon, and on no account give warm food or alcoholic stimulants.

Diseases of the Teeth.—True caries is very rare in the teeth of the lower animals, unless in the dog, but irregularities are met with in all animals. In the horse it is mostly necrosis which is seen, and invariably it is the fourth molar that is affected, owing, it is supposed, to its being the first permanent molar and shorter and thicker than the others. The pulp cavity becomes obliterated through ossification, thus preventing the usual supply of blood, and resulting in necrosis. In the majority of old animals the pulp cavity becomes filled with secondary dentine. Symptoms of a diseased tooth are fetid odour from the mouth, discharge from the nostril of the side on which the affected tooth is, sudden jerks, cessation of chewing food, quidding and throwing out the food in boluses (which often fill the feeding box with semi-masticated food), flow of saliva, resting the cheek on manger at intervals, holding the head to one side, and retraction and redness of the gum around the diseased tooth. The only treatment is removal of the tooth, which must be done according to its situation.

Dropsical Swellings.—Such swellings are common in all animals, and the cause and cure of the one also applies to the other. Dropsical swellings consist of an abnormal quantity of fluid, composed of serum with a very slight quantity of albumin. They are of two kinds—(1) those resulting from various obstructions or debility, and (2) those due to inflammation. The first named are quite soft to the touch, pit on pressure, and are free from any very high degree of heat or pain, while the latter are hard and usually very hot and painful to the touch. These effusions collect in most of the cavities and depending parts of the body, and are named according to their situation. They are very common in pigs (e.g., *œdema*), and are known under various names, those of the belly being *ascites*; in the chest or thorax, *hydrothorax*; around the heart, *hydropericardis*; and so on. The cause of the soft swellings is a retarded state of the circulation, an impoverised condition of the blood, or a combination of both; these, however, being the immediate causes and the results of other affections, such as want of tone, as in cases of weak heart (frequently occurring after influenza, bronchitis, pneumonia, and rheumatoid affections), also when the circulation is retarded, as in liver and kidney diseases, or from a sudden chill which disturbs the functions natural to all the secretory surfaces in health. Inflammatory swellings are characterised by their hardness, heat, and pain, and are due to congestion of the blood-vessels. In treating these swellings consideration must be given to their cause, extent, and situation. The removal of the fluid can be effected directly or indirectly, medicinally or mechanically. Direct or mechanical removal in urgent cases is obtained by tapping, scarifications, and setons; indirect or medicinal removal in less pressing cases can best be effected by arousing the action of the skin, and giving tone and vigour to the blood and circulation, which can best be effected by stimulants, rubbing, pressure, mild aperients, and diuretics. Potass. iodid. and ferri sulph. are very effectual in combination; tonics can also be given, and if the swelling proceeds from the liver, give magnes. sulph. and calomel or aloes and calomel; if from the kidneys, potas. nitrat. or spt. æth. nit. and gentian; but on all occasions find out the cause and get it removed. The form in which dropsical swellings are most commonly met in the horse is as swelled legs, which are more often due to debility than to any other cause. The fluid collects in the limbs mainly on account of their dependent position, and the swellings are more common in coarse-bred horses than in the pure or better bred. Acute cases, where the swelling occurs suddenly and to an enormous extent, are often due to chills and exposure, causing imperfect action of the lungs, bowels, and kidneys. Animals predisposed to this disease should get daily exercise and diuretics, especially if standing idle for a day or two. Usually hand rubbing, bandaging, and comfortable clothing, with slight purgative dose and diuretics, constitute all the treatment required. If the animal is anæmic or run down, a generous diet is essential, with a course of vegetable and mineral tonics.

LAMENESS IN HORSES

THE principal causes of lameness are fractures, sprains, ringbones and side-bones, splints, spavin, pricks in shoeing, corns, canker, thrush, sand-crack, seedy-toe, false quarter, and quittor. To the hock may be attributed by far the greater number of hind-limb lamenesses. Lameness caused by injuries to the hip and stifle are not very frequent, and cannot generally be diagnosed by any but an expert veterinary surgeon ; when, however, this lameness is known to be caused by a fall or blow upon the hip or upon the stifle-joint, treatment may be adopted such as would apply to any other direct injury, and failing an early recovery a blister charge may be applied, and 'Dr. Time' called in to complete the cure—valuable allies are time and the *vis medicatrix naturæ*.

Some lamenesses are caused by injuries to the spine, 'over the bridge' as horse-dealers say, and may be due to degeneration of the spinal cord or 'chinked back,' which is generally intended to mean some injury to the spine-bones, which makes a horse unable to back or turn or support a heavy load downhill ; or to a disease of colthood known as 'shivering' and due to some spinal degeneration but little understood (*see* p. 122). It is often of such a nature as not to be observed till the animal is put to work, and the same 'flat-catcher' is frequently sold at auction to the unwary till he becomes so well known as to excite a laugh among the *habitués* who attend the various metropolitan sale-yards.

Of causes connected with the feet producing lameness there are many ; among the commonest are pricked, stabbed, and wounded laminæ in shoeing. Many horses go lame from bad shoeing, though these are only a small proportion of the cases laid at the farrier's door. When it is actually proved that a horse has been pricked in shoeing, it does not necessarily follow that the farrier is to blame. It often happens that a horse may be lamed in shoeing by the nail going so *near* the sensitive part that it presses upon the quick and causes lameness after a few hours or days. There is no absolute rule to be laid down as to how soon a prick will manifest itself; it may show before the horse gets back to his stable, or fester after more than a week has elapsed. If he is observed to go 'feelingly' and the shoe is removed at once, he may be all right again immediately, or he may not. Many horses get a 'stab,' as farriers call it, and receive no other treatment than the pouring into the wound of a little nitric acid. If this had not proved successful, or at least not harmful, in many thousands of cases, we should

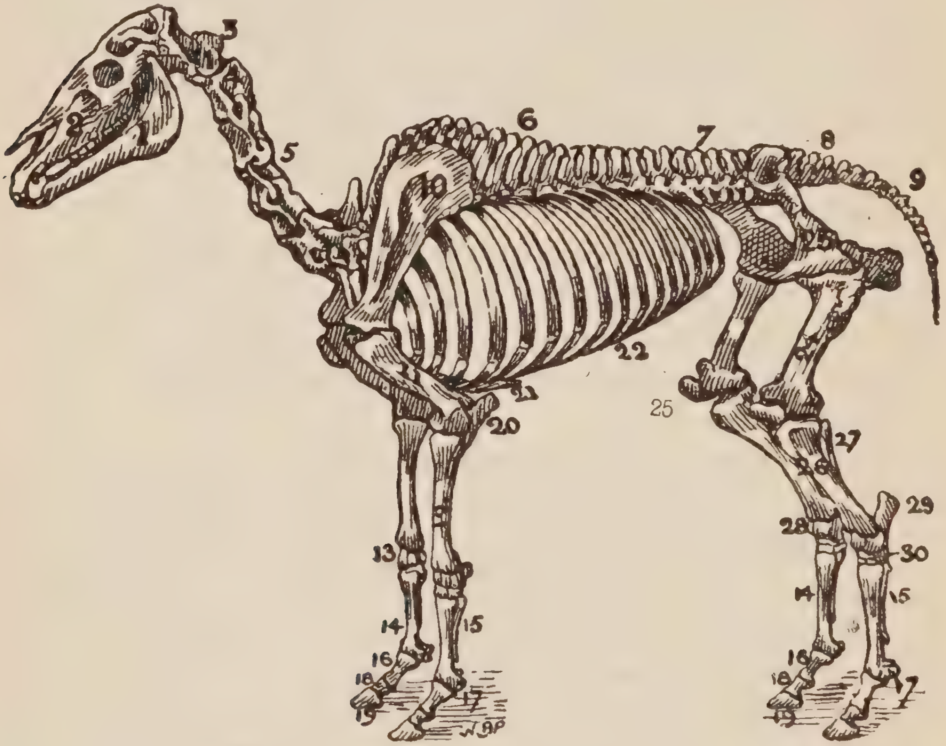

FIG. 14. SKELETON OF THE HORSE.

1. Lower jaw; 2, superior maxillary; 3, atlas, first vertebra of the neck; 4, dentata; 5, remaining vertebræ; 6, superior spinous processes; 7, dorsal and lumbar vertebræ; 8, sacrum; 9, coccygeal, or tail bones; 10, scapula, or blade bone; 11, humerus; 12, radius; 13, carpel, or knee bones; 14, cannon, or shank bones; 15, splint, or splent bones; 16, long pastern, or os suffraginis; 17, sesamoid bones; 18, os corona, coronet bone, or short pastern; 19, os pedis, pedal bone, or coffin bone (navicular bone behind); 20, elbow, or ulna; 21, sternum, or breast bone; 22, ribs; 23, ossa innominata (including pelvis); 24, femur; 25, patella, or stifle joint; 26, tibia; 27, fibula; 28, astragalus; 29, os calcis; 30, small bones of hock.

say it is a barbarous custom ; but, as nothing succeeds like success, we must pass it by—unless, indeed, we stop to note the fact that modern knowledge of microbes explains how entirely

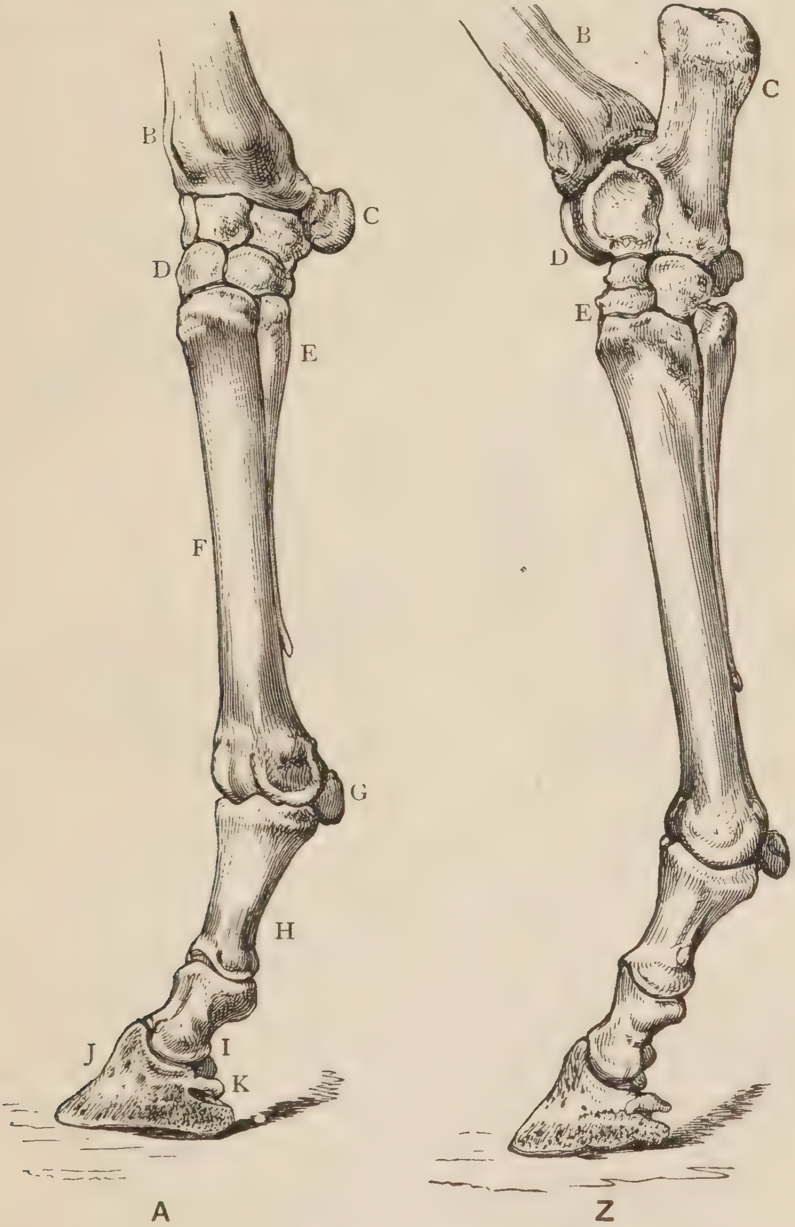

FIG. 15. LEG BONES OF THE HORSE.

A FORE LEG.—B, lower third of radius; C, trapezium; D, small bones of knee arranged in layers; E, splint, or splent bone; F, cannon, or shank bone; G, sesamoid bones; H, long pastern, or os suffraginis; I, short pastern, or coronal bone; J, os pedis pedal, or coffin bone; K, navicular, or shuttle bone.

Z HIND LEG.—B, lower third of tibia; C, os calcis; D, astragalus ; E, small bones of hock. The bones below the hock are designated by the same names as in the front limb.

satisfactory a remedy is that will at once and effectually exclude those pyogenic organisms which give rise to suppuration. If a horse is lame, and the cause is not actually known, it is best to consult a veterinary surgeon. The diagnosis of lameness is one of the most difficult branches of veterinary practice, and the counter prescriber who would do justice to his client will not attempt it. If a prick is known to be the cause of lameness, no time should be lost in removing the shoe and enlarging the nail-hole with a searcher, the practitioner not resting satisfied till the sensitive parts are discovered.

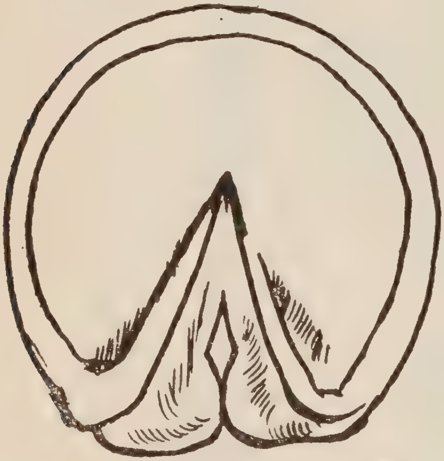

FIG. 16.
A GOOD OPEN FOOT.

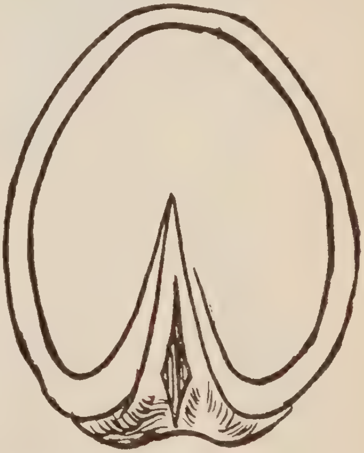

FIG. 17.
A CONTRACTED FOOT.

The degree of lameness from pricks seems to be out of all proportion to the extent of injury, and a horse may be unable to bear the least weight upon the foot, though only a mere drop of matter may be confined in it. Once this pus gets exit, the animal is greatly relieved. A matter like green sap is more often discovered than pus ; it is decomposed horny matter, of characteristic colour and sulphuretted odour.

If pricks are not very quickly relieved by enlarging the orifice below, the matter makes its way upwards in the line of least resistance, coming out between hair and hoof, when it is a much more serious affair. If one is not called upon to treat it until this stage a drain should be attempted below all the same, as sinuses are always feared, which, when once established, constitute quittor.

The treatment of pricks consists, first of all, in having the nail-hole thoroughly pared out to give exit to any matter; then placing the foot in hot water with an antiseptic for about an hour, after which a poultice should be applied; a poultice containing yeast is almost a specific in foot treatment, the ferment drawing out much faster than an ordinary poultice. A fresh poultice should be put on every day for two or three days until there is no discharge, after which the following ointment on a pledget of tow should be introduced into the wound and kept there by means of strips of wood or hoop-iron wedged under the shoe :—

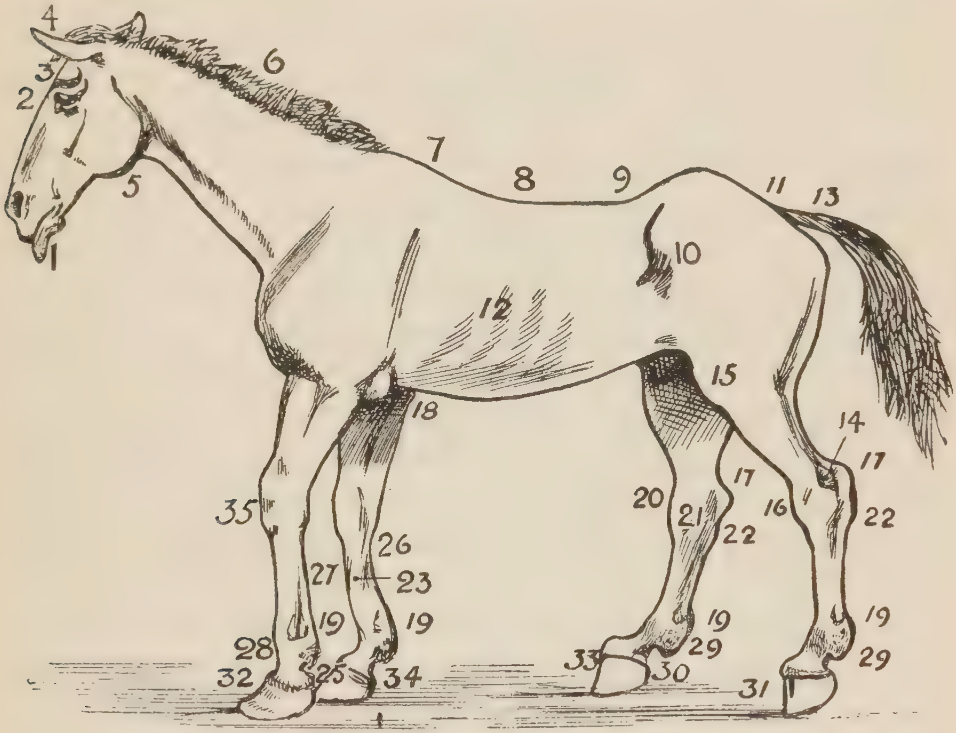

FIG. 18. EXTERNAL AILMENTS OF THE HORSE.

1, Pendulous lips; 2, cataract and amaurosis; 3, hollow orbits; 4, pigs' ears; 5, enlarged glands; 6, itchy mane; 7, fistulous wither; 8, saddle-galls; 9, hollow-backed; 10, knocked-down hip; 11, crupper galled; 12, slab-sided; 13, goose-rumped; 14, thoropin; 15, enlarged stifle; 16, bog spavin; 17, capped hock; 18, capped elbow; 19, wind galls; 20, enlarged ligaments; 21, spavin; 22, curb; 23, sprained tendon; 25, greasy heel; 26, contracted tendons; 27, sprained back tendons; 28, shotover fetlock; 29, enlarged sesamoids; 30, cracked heels; 31, sand-crack; 32, pumiced foot; 33, crown scab; 34, quittor; 35, enlarged knee.

Ceræ Flav.	℥j.
Adipis	℥ss.
Ol. Nucis Coc.	℥ss.
Picis Archangel.	℥iv.

Ft. unguentum.

A dose of physic should also be administered during the time the foot is being poulticed.

Diseases of Bone are divided into inflammatory and non-inflammatory. The inflammatory are those where there are organic changes in the bone with inflammation, the non-inflammatory where there are organic changes without inflammation. The commonest non-inflammatory disease of bone met with in veterinary practice is rickets (*rachitis*), due to a non-deposition of the earthy matter in its proper proportions, mal-assimilation, and non-development of the material necessary to the formation of bone. In this case there is a deficiency in the inorganic elements of the bones—viz., phosphate and carbonate of lime. The disease is seen in foals, calves, and young dogs—spaniels mostly. In foals and calves it is the metacarpal and metatarsal bones which bend soonest, while in the dog it is the lower third of the humerus, which gives the animal a dwarf-like appearance and peculiar jerky gait in walking. Rickets appears when the animal is a few weeks or months old, and is caused by constitutional debility, scrofulous diathesis, or by external and preventible causes. It is seen in calves when their mothers are not allowed to suckle them, and in foals when the dams are put to work too early and for too long a period, thus causing overheated and 'hefted' milk. The treatment is constitutional and mechanical. As the disease is always associated with indigestion and mal-assimilation, it is necessary that the animal should be regularly and carefully fed and get plenty of pure air. A mild aperient should be given in the earlier stages, and antacids, such as lime-water and bicarbonate of soda, with nourishing food rich in bone-producing matter (good milk, linseed tea, cod-liver oil, etc.). Compound syrup of phosphates is a good restorer. The curvatures in the bones can be supported by means of splints, plaster of Paris bandages, etc. If there is great pain and lameness, fomentations and slight friction by rubbing often give relief.

Cracked, Chapped, or **Sprayed Heels** are a frequent source of trouble to the horse-owner, and are generally caused by bad management. Some horses are predisposed to this troublesome complaint. It more often occurs in white legs than in others, and is not peculiar to any particular breed or class of horse. Working in snow and on roads that have been salted, or crossing streams of cold water, may account for a few of the cases met with, but the majority are caused by washing the heels after work, and allowing the moisture to evaporate and produce a chill to the sebaceous glands of the heel, which become thereby inflamed, and pour out an irritating material, instead of performing their usual function of keeping the skin supple, the result being that the skin cracks, and, if neglected, these fissures ulcerate. Horses subject to cracked heels should not have the legs washed on coming in from work, but be brushed clean after the legs are dry. Even the carefully coddled hunter does not always escape, though the heels be dried and bandaged.

In a mild case of cracked heels mild remedies are best, such as either of the following :—

Liq. Plumbi Subacet. fort. .	℥j.
Ol. Olivæ ad	℥xx.
M. ft. liniment.	

Liq. Plumbi Subacet. fort. .	℥j.
Glycerini	℥j.
Aq. ad	℥xx.
M. ft. lotio.	

If the heel has already become encrusted with dry matter, the liniment softens it, and enables the animal to work with less likelihood of aggravating the affection ; but the glycerin preparation will allay inflammation better, even if the heel be very red and tender, and not actually discharging matter.

In very bad cases, rest, poultices, and fever medicines become necessary. The poultices should contain a little liq. carb. deterg., or Jeyes' fluid, or carbolic acid 1 to glycerin 20 parts. Equal parts of sem. lini cont. and bran are to be preferred, but the practitioner in some out-of-the-way places will have to make shift with turnips, or anything that comes handy.

Cracked heels also occur in dry summer weather, and are not traceable to any mismanagement, but rather to the irritating effects of the dust settling in the heel. When caused in this way greasy preparations are perhaps the best, and among these ung. zinci carb. has a good reputation where ung. zinci ox. is too irritating. Professor Simonds used to recommend pulv. zinci ox. mixed with flour, and mentioned an obstinate case which was finally cured by flour alone. In the summer, when flies are troublesome, a little tar or phenol should be added to the ointments. When ulcerated cracks are developed, they need treating with powerful astringents, which should be carefully applied to the ulcers only. For this purpose we have found the following better than anything else:—

Pulv. Cupri Sulph. . . . . } partes æq.
Pulv. Alum. Exsic. . . . . }

This may be dispensed as a lotion if preferred, dissolving a drachm of each in aquæ ℥vj.

The milder astringents are to be preferred in the treatment of cracked heels, as the union is the more lasting if not hurried. Only in chronic gaping sores with indurated edges should we resort to the last formula. Cracked heel is a condition always liable to recur, and should be looked upon with suspicion when making a purchase.

Corns.—A corn is an injury to the horn of the foot, at the same time involving the tissues beneath, causing rupture of the minute blood-vessels and the escape of blood, which, by permeating the horn in the neighbourhood, gives it a dark colour when cut down upon. Corns are usually situated on the inside of the foot, between the bars and the wall of the heel. Many horses have such corns, and never suffer lameness while properly looked after. If, however, the farrier fails to keep a corn pared, or puts on a shoe having a bearing upon the part, lameness soon results, and festering too often follows. A three-quarter shoe is often effective in curing a corn, when all other remedies fail. Sometimes the shoeing-smith, or *farrier*, as he is more properly called, gets all the credit of producing corns in horses. Corns much more often arise from the owner's meanness or the groom's neglect than from the farrier's method of shoeing. While the horse's foot continues to grow the shoe does not, and the shoe that once had a bearing on the crust only, finally presses upon the seat of the corn, and produces the mischief we have now under consideration. If the horse-owner insists upon wearing out shoes to the thinness of a sixpence, no matter how long they may have been on, he has only himself to blame if corns result. Some horses with low, flat feet, like those of the Netherlands, have a predisposition to corns, while the upright feet of the Arab type are not so susceptible.

When a corn festers and causes lameness, the knife must be used freely to lay it bare, and ung. resinæ, or other drawing or 'digestive' material, applied, and the whole foot should be enveloped in a poultice. If this is done promptly relief is soon obtained, and the parts may be hardened off with liq. antim. chlor. or tar on tow, and the shoe replaced so as to have no bearing upon the tender parts. If this is not done in good time the matter will break out at the coronet. Bar-shoes and other contrivances help to reduce the bad results of corn, but it is a serious objection to a horse, and always liable to be a cause of lameness. In New Zealand the customary treatment of corns in horses is to poultice, then the part is opened and washed out with an antiseptic lotion. Gentle exercise is better than rest.

An effective method of relieving a corn, and also of removing it altogether if it has not been too long neglected, is to put the foot into a strong solution of washing-soda for a few hours daily, and in a few weeks the corn will have disappeared.

Ring-bones.—This is a term given to an abnormal growth or deposit of bone upon the pasterns or lower bones of the legs. There are two pastern bones, called respectively the long and the short, or *Os suffraginis* and *Os corona.*

All breeds of horses are liable to ring-bones, but heavy draught-horses especially so, their bones being shorter and more upright than those of the blood horse, and concussion being more violent as a consequence. The arrangement or anatomical construction of the horse's foot and leg is such as to minimise the chances of concussion and subsequent inflammation ; but it must be remembered we are almost always dealing with animals in an artificial state when we are asked to prescribe for lameness or deformity. Ring-bone may occur on the front or hind pasterns ; it may be on the upper bone, when it is called 'high ring-bone,' or on the lower, just above the hoof, when it is denominated 'low ring-bone,' and must be distinguished from side-bone, of which we shall treat hereafter. It is often hereditary, and found upon the same horse as splint, spavin, and other exostoses, as growths of bone are technically termed. It should be remembered that the growth of a ring-bone is from the *outside.* Bones do not grow from within outwards, but from the periosteum, or covering membrane, and when by concussion this membrane becomes inflamed its function of secreting bone is excited, and calcareous phosphatic matter is produced in excess. Unless ring-bones happen to be an hereditary production, the animal having a bony diathesis, or predisposition to throw out deposits of bone, they are caused by a greater strain than the existing bones can endure, and the production of more bone is within certain limits a physiological process destined to prevent the recurrence of the strain by providing against a like contingency. There is also a combination of high and low ring-bone, when not hereditary, caused by kicks by vicious attendants and by high-heeled shoes.

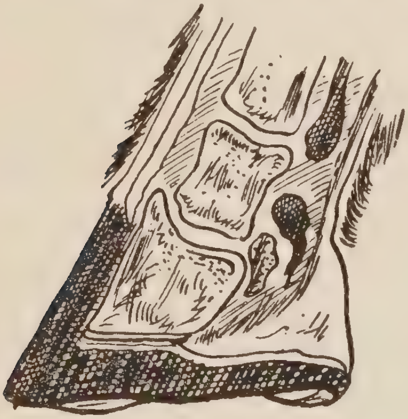

FIG. 19.

SECTION OF PASTERN AND FOOT.

Showing portions of Long Pastern, Short Pastern, Pedal Bone, Navicular, etc.

The process and the products of inflammation are now regarded in a totally different light from that formerly prevalent. Inflammation of any structure is in reality an effort of nature to accommodate the parts to altered circumstances. This may best be illustrated by reference to the human hand. The soft palm will blister with an hour's rowing ; the blister is the result of inflammation. The sequel is a corn, and the rower's altered condition will soon enable him to use the oars without blistering. If he leave off rowing, and the corns are no longer required, nature gets rid of them. If this is borne in mind in the treatment of horses, good results will follow. All ring-bones do not require the same treatment. We will suppose a client has a young cart-horse which has fallen lame with incipient ring-bone. This is the time to use a sedative or evaporating lotion, in order to modify the extent of the inflammation, and not produce a lot of bone, which will be an eyesore and a detriment to the horse. In such a case an excellent lotion may be made as follows :—

Acidi Acetici	℥j.
Tinct. Arnicæ	ʒij.
Liq. Plumbi Subacet. fort. . . .	℥j.
Spt. Vini	℥j. vel ℥ij.
Aq. Dest. ad	Oj.

M. ft. lotio.

To be applied on a wet swab or bandage, renewing it frequently. In a young horse this will probably so reduce the irritation in the course of a few days that he will go sound again ; but the *cause* must be removed, and the colt turned out to grass till his bones become more consolidated and fit to bear the concussion and strain of starting heavy loads on hard roads. If the owner cannot or will not be persuaded to turn the colt out, or, as often happens, has not the capital to invest in another, then blistering must be resorted to. Blistering will probably *not* remove the ring-bone, but it will absorb some of the deposited material, and, by thickening the skin and subjacent structures, give increased support to the parts, as does the corn upon the rower's hand. It often happens that, with a steady driver or considerate carter, a ring-bone will entirely disappear, the horse never being again subjected to so severe a strain as that which caused it, and its absorption being undertaken by nature because found to be unnecessary.

This does not apply to hereditary ring-bones ; their absorption is seldom accomplished with or without treatment. A great many cart-horses have ring-bones without experiencing any particular inconvenience, and they are best left alone unless there is lameness or a palpable increase in their size, when blistering should be resorted to. There are blisters *and* blisters, and before deciding what to use, the question should be asked, At what age and under what circumstances has the subject developed ring-bone? If it be a recent case, a cantharides blister will do well enough. If of long standing, then the following should be employed :—

Hydrarg. Biniodid.	ʒj.
Adipis	ʒvij.

M. ft. ung.

The biniodide is generally preferred for all bony enlargements.

Three or four ounces will be required for a cart-horse's leg even when clipped tolerably close. All veterinary preparations should have an allowance for waste ; if it be an ointment some will run down and fall off, and if it be a drench some will be spilt. 'Half in and half out, like a farrier's drench,' is quite a stable proverb. A practical prescriber will not fail to tell his client to tie the horse's head up for at least two nights and days, lest the patient should gnaw the parts, damage the skin irreparably, and blister his own nose—a most unsightly accident. A basket suspended from the ceiling can be used for the food if the horse shows a disposition to strike the manger with a front leg that has been blistered. Whenever a blister is prescribed for any of the lower parts of the legs the owner should be cautioned to remove the straw, as much unnecessary pain and sleeplessness are produced by the ends tickling and irritating the blistered surface.

On the third day after blistering, a simple ointment should be used to soften the skin and prevent cracks and ulceration ; this is very grateful to the patient, and will usually prevent him from gnawing the blister when his liberty is restored to him and the opportunity given to lie down. Blisters indifferently applied cause pain without benefiting the animal, and humanity demands that we shall take every care to apply them properly, not in a perfunctory manner, requiring repetition, or, as with acid. sulph., causing sloughing of the skin and permanent blemish. Careful veterinary surgeons, after seeing that the limb to be blistered has been properly clipped, begin the operation by putting a little ung. simplex into the heel, as that is the part most likely to crack and cause lasting trouble.

The following is *an effectual blister* in much request by veterinary practitioners :—

Pulv. Cantharidis	℥j.
Pulv. Resinæ	℥j.
Adipis	℥iv.

Melt the lard and resin together, add the cantharides, and stir till cold.

Large surfaces should not be blistered with cantharides, and not more than two legs at one time, as absorption causing kidney trouble has been known to occur. If a stale hunter or broken-down horse has to be blistered 'all round,' as it is said, he should have alternate diagonals done; thus a near fore and off hind leg in blister : leaving off fore and near hind legs upon which his weight may be distributed.

Preparations of mercuric chloride and blisters containing turpentine should be avoided : they are extremely painful, liable to produce sloughing, and not *lasting* in their results, while the effect of a biniodide blister is often observable for months after application.

If a horse is gross and disposed to have swollen legs, he should be kept on bran mashes for twenty-four hours, and get a physic ball of from four to six drachms, according to his size.

Side-bone is a conversion of the lateral cartilages found on the wings of the coffin-bone into bony material by the deposition of lime salts. It usually only affects the fore feet, and is a frequent cause of lameness, especially in the formative period. Heavy draught-horses are more affected with it than farm-horses, and it is cured by making several incisions with a small saw down the wall or horn that covers the cartilage. Another treatment which gives almost immediate relief is to cut out the piece of wall affected. It is usually triangular in shape.

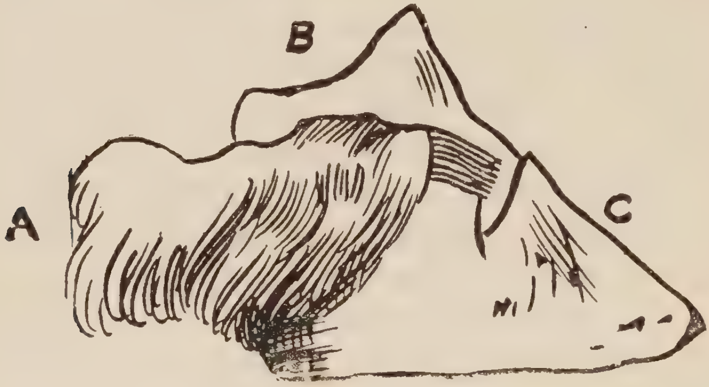

FIG. 20. A HORSE'S HOOF.
A. Lateral Cartilage, in which side-bone forms.
B. Short Pastern Bone. C. Pedal or Coffin-bone.

Spavin is a frequent cause of lameness in the hind limbs, though there are bony deposits, known as knee spavins, in fore legs. A spavin, when not otherwise defined, may be taken to mean an alteration of the hock on its inner surface. In old works three kinds of spavin were described under the title bone, bog, and blood spavin ; but the last-named is now seldom heard of, being in reality but a varicose condition of the large vein (saphena) passing over the seat of spavin Bone spavin consists of a deposit of bony matter on the inner surface of the hock at or about the junction of the shank-bone (metatarsal), the splint-bone, and the lower row of small bones of the hock. It arises from concussion and subsequent inflammation of the periosteum, and results in more or less enlargement at what is commonly called the 'spavin place.' The majority of cases yield to treatment or become 'callous' without any treatment, and, beyond the fact that they circumscribe the sphere of movement of the joint, may not be any great source of trouble, though always constituting unsoundness, since an old spavin may at any time cause trouble. (Unsoundness is defined as 'anything which does now, or may hereafter, interfere with the usefulness of the animal.')

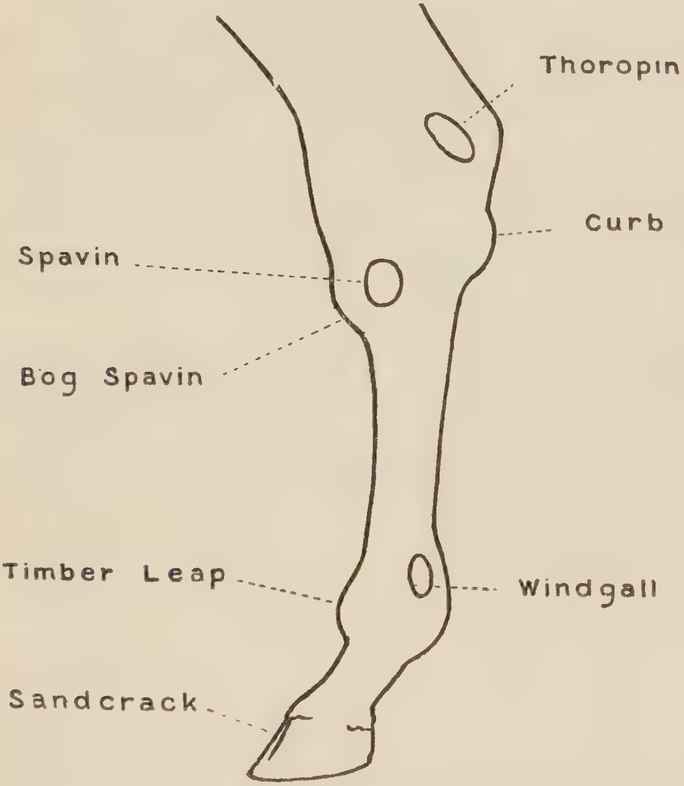

FIG. 21.

The treatment commonly adopted is that of blistering and rest, with, if possible, a run at grass or three months in a straw-yard. In blistering for the cure of bony growths we should always advise hyd. biniod. of a strength varying from 1 to 7 to 1 to 12 of vaseline, or lard, or lanoline. Some veterinarians prefer goose-grease as more penetrating, and having in itself a mollifying influence upon stiff joints.

Bog spavin is a soft enlargement in the front of the seat of bone spavin. It may be only an enlargement of a bursa—one of those lubricating sacs filled with a glycerin-like fluid, and placed upon all the points most liable to friction—or it may be associated with thoropin or a dropsical condition of the whole joint. Continued pressure, by bandages and other special apparatus designed for the purpose, will often reduce recent cases, but a blister, repeated in a month, with rest, is a more effectual remedy, since the thickening and contraction of the skin that follow act as a permanent bandage. 'Charges' are of especial value for the treatment of these bursal enlargements (*see* p. 45). Firing produces a still firmer bandage, as the elasticity of the skin is removed by the new and inelastic material which nature produces to fill up the gaps made by the iron; thus it is that firing sometimes succeeds when all other remedies have failed.

An Australian practitioner writes :—

> Biniodide blister is the only article recommended that comes within our sphere, yet if we wish to be equal to the demands made on us, and to establish or retain a name for veterinary pretensions, it behoves us to know of other remedies. The following provides an excellent lotion :—

Camphoræ	℥iiss.
Ol. Terebinthinæ	℥xxx.
Ol. Rosmarini	℥j.
Iodi	℥iij.
Potass. Iodid.	℥ij.
S.V.M.	Ov.
Aquæ	Oij. M.S.A.

> In addition to biniodide blisters, Elliman's Royal Embrocation is greatly used in the external treatment of the horse.

False Quarter is a fault in the hoof produced by some injury to the coronet, or coronary band, from which the outer wall of the hoof is secreted. It frequently follows upon treads, quittor, etc., and there is not much to be done for it.

Tread, or **Over-reach,** is a bruised or wounded coronet caused by over-reaching or treading one foot upon the other in turning or backing. It is generally among heavy draught-horses that it occurs. Rest, poulticing, and emollient applications, as ung. cetacei ℥j., acid. carbolic. ♏x., usually effect a cure, unless the injury is too deep, when sloughing ensues, and sometimes quittor and false quarter. If a slough soon comes away with poulticing and emollients, a healthy wound is left, which may be very well treated with tinct. benzoin. co. or ung. picis.

Sand-crack is a division in the wall of the foot. In the fore foot it generally appears on the inside, and at the toe or in front of the hind foot. It is a serious defect, and should be looked for in purchasing a horse, the crack being sometimes neatly filled up with shoemaker's wax, and blacked over in such a manner as to escape the eye of the unwary.

Treatment consists in taking the bearing off the shoe, approximating the cracks by screws and other mechanical contrivances, and by stimulating the coronary band to form new material by firing, or by blistering it repeatedly with some mild blister such as hyd. biniod. 1 to 12. Firing a **V** in the hoof so as to leave the top of the crack in the centre of the **V** is a very good plan; the concussion of the foot is thereby diverted from the injured part of the coronet, and gives it the nearest approach to rest that can be obtained. Side-clips in shoe are beneficial, as they help to keep the foot solid.

Canker is a disgusting fungous growth occupying more or less of the surface of the sole and frog, which produces a broken-down, cheese-like discharge. It is seldom curable, though it may be kept in check with nitric acid and other escharotic agents combined with pressure. Coal-tar dressings are serviceable, and should be used after the caustic agents. It is better left to the regular practitioner, aided by the smith, and consummated by the knacker. Stripping the sole is sometimes resorted to, but is a very severe operation and of doubtful advantage. There are not wanting, however, authentic instances of recovery due to such treatment.

Seedy Toe is an imperfect or perverted secretion of horn, a cheesy kind of material being produced and causing separation between the horny laminæ and the crust. It is not confined to the toe, but derives its name from being most often found there.

Treatment consists in removing all the defective horn and stimulating the growth of new material by blistering the coronet and stuffing the foot with tar ointment, etc. It is an occasional cause of lameness, and constitutes unsoundness. It may easily be detected by tapping the unsound foot with a hammer, and comparing the sound with that of a healthy one.

Navicular Disease may be said to cause more lameness of the chronic form than all others put together. It begins as concussion, and ends in ulceration of the navicular bone. It is hereditary, and often comes on very early in horses working on the stones. No class of horse is exempt from it, but light horses with good action are the most, and heavy horses the least, frequent subjects.

Pointing one foot in front of the other alternately and advancing the opposite hind leg is a common symptom. Many horses are able to work though suffering from this disease, as the lameness goes off with exercise and only returns after standing some little time. It always grows worse, however, and there is a shrivelling and a shrinking of the frog ; it is a very serious example of unsoundness, if showing even to a slight extent. Blistering and a run at grass appear to cure it, but if the history of the patient can be traced it will generally be found that the operation of dividing the sentient nerves (neurotomy or neurectomy) has to be resorted to. Some horses go sound (but without any feeling in the feet) for several years, while others have to be killed on account of the hoof sloughing off, or of the tendons breaking away and bringing the heel down and the toe up.

Thoropin is a soft enlargement between the bones of the hock and the point (os calcis, *see* p. 146), and derives its name from the fact that pressure on one side will make it bulge on the other as though a bolt or pin were run through it. The same cause gives rise to it as to bog spavin, and the treatment should be the same. Blister charges enveloping the whole joint save at the point of the os calcis are recommended. An animal may have both bog spavin and thoropin without lameness, but both defects are apt to increase unless timely treatment is adopted. Thoropin trusses worn in the stable are beneficial.

Curb is another source of lameness, and is a sprained ligament at the back of the hock-joint. It is of frequent occurrence in young horses put to work before their structures are capable of bearing the necessary strain entailed in jumping or other violent efforts. Many Irish horses are fired over the seat of a curb as a precaution against it, and must not be rejected as the subjects of curb for the simple reason that firing-marks are to be observed.

Fomentation, cooling lotions (*see* Sprain, etc.) may be used with advantage, but in severe cases a blister, or even firing, may be necessary, and some slight enlargement will still remain, though the ligament may have become as strong as ever. It is an unsoundness liable to recur. The following blister took down a curb as large as a hen's egg :—

Hydrarg. Iod. Rub.	ʒij.	
Iodi	ʒj.	
Hydrarg. Oleat. (20 per cent.) . .	ʒj.	
Ung. Hydrarg. Fort.	ʒij.	
Ung. Resinæ ad	℥ij.	M.

Sprain.—Sprain, by which is meant a stretching or even partial rupture of a ligament or tendon, varies in degree according to its severity and situation. Sprain of a joint ligament may induce organic disease in the joint itself ; sprain of a tendon may be followed by permanent thickening and defective action. No matter how slight a sprain may appear, it should be carefully treated. The most common error in the treatment of sprain is confusing the acute with the chronic stage, applying cold to a chronic injury and stimulants to a recent one. The objects of treatment are in the first stages to keep down inflammation and prevent exudation and swelling ; in the second to stimulate absorption, promote repair, and guard against complications. Application of hot and cold water alternately is advisable. Get a watering pan, and gradually run on the hot, and then immediately after apply the cold water. Do so for some time—say, half or one hour—then bandage. The following lotion is excellent :—

Potass. Nit.	℥j.
Ammon. Chlor.	℥j.
Sodii Chlorid.	℥j.
Aquæ	Oiss.

If warm water is used, some anodyne may be added, such as belladonna or opium. The treatment must be continued until all violent symptoms have passed off—till the intense pain and heat are gone ; then a dry bandage and occasional mild hand-rubbing may be adopted for a day or two, after which some stimulant is needed to promote absorption and repair. Plaster bandages (lead, resin, and the like) are of great assistance in restoring weak or sprained tendons to their normal state. There are many good applications. Liniments of ammonia and iodine, and tincture of cantharides are all good. They should be applied daily in small quantities and with moderate friction.

A very good stimulating liniment may be made as follows :—

Castor Oil	2 oz. of each
Rape Oil	
Spirit of Turpentine	

Shake, then add—

Strong Solution of Ammonia	3 oz. of each
Water	

This preparation has the merit, too, of being elegant, and can be diluted with an equal proportion of water without losing in appearance. Should this treatment not effect a cure, the part must be blistered once or twice, and, as a last resort, firing and a run at grass may be necessary. Rest in all cases is absolutely essential, and that, too, for a considerable time. Cases seemingly incurable will frequently come up sound after a summer's run. While confined to the stable an animal should not be allowed much corn ; bran should be used with grass or hay, and the bowels should be kept open with physic if necessary.

Captain Hayes, F.R.C.V.S., is a great advocate of wrapping a recent sprain with cotton wool, with a bandage outside, to afford even and gentle pressure. Castor oil is a blistering agent by itself, and should only be used when a blister is required.

Thrush.—Every horseman knows by sight this disease of the horse's foot ; many know how to cure it, but few know the cause, and thus its prevention is neglected. Doubtless dirt is the exciting cause, but dirt alone seldom produces a bad 'thrush.' Heavy cart-horses are of all most subjected to dirty roads, and their feet are most neglected in the stable. Nevertheless, with few exceptions, they are free from this evil. The horses of gentlemen and dealers are not as a rule subjected to much dirt ; they have the greatest attention in the stable, yet they are of all classes most troubled with thrushes. The explanation of the difference is probably that cart-horses are neglected by the horse-shoer, while the feet of the lighter horses are trimmed and pared so as to please the eye. In a state of nature the horse's frog comes down on the ground at each step. When shod, and especially if much pared, it seldom gets the slightest pressure. Now, this pressure appears to be necessary to the healthy growth of the frog. Just as a man's hands become hard and strong by work, or weak and tender by idleness, so the horse's frog, by never being brought into use, gets thinner and weaker. Want of pressure, then, we say, is the *predisposing cause*. It will generally be found that horses standing in a stall have the hind feet affected more frequently than the fore ; the reason of course is that the hind feet are most exposed to the excreta of the animal.

Thrush, unless it be constitutional and in the nature of an issue, is not difficult to cure, and is just one of those complaints for which the prescribing chemist is often consulted.

It is a fœtid discharge from the frog, and its disagreeable odour is characteristic of decomposed horn. The frog presents a rugged appearance, with holes in it containing decomposed matter, but the bulk of the discharge is from the cleft.

The treatment is very simple. First thoroughly cleanse the foot with warm water and remove all loose portions of horn ; then apply some mild astringent and stimulant. The discharge should not be dried up suddenly by any strong dressing, as a swollen leg is a not uncommon sequel. The following is good :—

Alum	1 part
Common Salt	1 ,,
Stockholm Tar.	4 parts

Some alterative balls should be prescribed in cases where the disease is chronic and constitutional. They should contain a drachm of aloes, and otherwise their composition will be that of the common diuretic ball.

Should the case prove obstinate, substitute for the salt sulphate of zinc. To avoid thrush in the stable, the master should give orders that the frogs are not to be pared at the forge, but that merely the *loose* portions of horn are to be removed. A bar shoe should never be put on a diseased frog. Iodoform or calomel, or even common salt, and the frog dressed with tar and tow, generally suffices in an ordinary case.

Many chemists are possessed of 'a good remedy for the thrush.' More often than not these remedies are too good ; they dry it up and shrink the frog away if applied properly, or fail to penetrate the cleft and do not accomplish their object. In curing thrush in horses or foot-rot in sheep a frequent difficulty consists in getting the diseased parts carefully trimmed away, and the cleft cleared out. The latter should be done with a flat piece of stick ; if this be carefully seen to in a thrushy foot, very strong caustic remedies are not necessary. A very good thrush-dressing is the following :—

Sodium Chloride	℥j.
Russian Tallow	℥ij.
Coal Tar	℥vj. Mix.

This inelegant preparation removes the disease, and prevents the drying up and shrinking of the frog. It is quite capable of being improved by our pharmaceutical readers in such a way as to look and 'nose' better without losing any of its merits as a curative agent. It is equally good for foot-rot in sheep. Where the use of a powder is desired the following may be recommended :—

Zinci Carbonat.	℥j.
Acidi Borici	℥j.
Hydrarg. Subchlor.	℥j.

Calomel is almost a specific for thrush. If used alone it may be coloured with a little red bole.

Wind-Galls, so called, are occasionally, but not often, a cause of lameness; they usually indicate hard work or premature use of a horse, and reduce the value, however little they may interfere with the usefulness of the animal. They can scarcely be called an unsoundness, unless hard and inflamed or giving evidence of pain, which is rare. They were formerly supposed to contain air, hence the name, but they are really enlarged or dropsical bursæ (*see* Bog Spavin). The pressure of a bandage will reduce them temporarily, and if constantly applied will prevent them getting worse, while blistering and rest will for a time quite remove them. A bandage dipped in glue is a capital remedy for their reduction when a few weeks' rest can be procured. They should on no account be pricked or opened.

A pad of cotton wool pressed well upon a wind-gall often does good, or a sprinkling of ol. hydrarg. 20 to 25 per cent. every night if the animal can be rested. A lead charge is also beneficial.

Rheumatism in Horses.—There are many obscure cases of lameness in the horse which the veterinary attendant is obliged to assign to rheumatism. The intermittent character of the pain, swelling, and lameness, and their sudden transference from one joint to another, and from a front to a hind limb, so much resemble rheumatism in human subjects that we may be content to call the malady by the same name, pending further pathological enlightenment. The causes which contribute to rheumatism in men do not seem to be active in horses ; hence we find the stabled animal more subject to it than the horse at grass, exposed to all the winds of heaven, and with only the wet ground to lie upon. Liquid blisters which act quickly appear to do more good than anything else when puffy joints are concerned. They 'draw out' the rheumatic poison, so say the old practitioners, and their 'say' is still worth attention. For the lameness known as rheumatism, potassium nitrate (ʒij.) and bicarbonate (℥j.) may be given, or salicin ʒj. to ʒiss., or sodium salicylate in two-drachm doses three times daily.

A very good *Rheumatic Liniment* is the following :—

Lin. Aconiti	℥j.
Lin. Belladonnæ	℥ij.
Tinct. Opii	℥j

M. ft. liniment.

Blistering is also recommended in the case of swollen and inflamed joints supposed to be due to rheumatism, because the blisters act as eliminatives. Whether this theory be correct or not, experience for hundreds of years has proved that blisters give relief to swollen and painful joints from almost any cause save the presence of pus.

Laminitis, Founder, or **Fever in the Feet,** is a disease of the horse's foot in which the sensitive layer immediately within the hoof is congested or inflamed. It is commonly caused by over-work, such as a long journey on a hard road, or hard work in horses out of condition. Laminitis is also caused by stagnation and congestion of the vascular system due to a sudden oppression brought about by a large draught of cold water and feed of corn while in a heated state, by worms in the stomach and intestines, and by heavy doses of physic. It often follows febrile and debilitating diseases—*e.g.*, influenza.

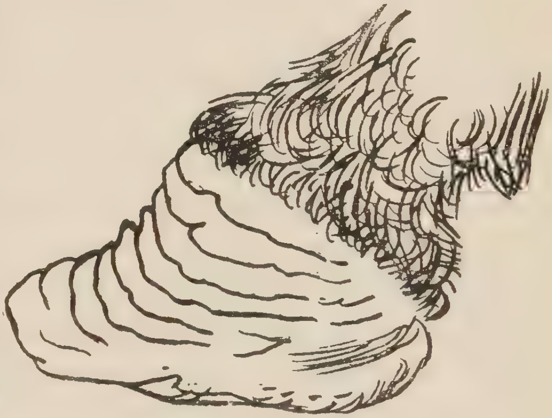

FIG. 22.

A BAD CASE OF LAMINITIS OR FEVER IN THE FOOT.

Symptoms. — First, frequent shiftings of the feet, and signs of pain, as quickened breathing and pulse. Next, fear of raising one foot lest extra weight be thrown on the other, with swaying of the body backwards and forwards without the feet being moved. If force is used the animal moves as though his back was injured, and puts the heel most markedly on the ground. When the fore feet alone are affected, as is usually the case, the hind feet are drawn forward under the belly, and the animal leans backwards so as to lighten the weight on the front limbs. The affected feet are hotter than usual, and throbbing is felt above the coronet.

Treatment.—Give an aperient (ol. lini Oj.), to which may be added tr. opii ℥j., or several doses of sodii salicylat. ʒij. ; Follow this up with draughts, each containing alum. ℥j., potas. nitrat. ℥ss., tr. aconiti, B.P. ♏xv., aquæ ℥xx. Four such draughts to be given within twelve hours. This sometimes has a marvellous effect in reducing fever and swelling. Remove the animal to a smooth, hard-bottomed loose-box with a light covering of clean straw. The shoes *must* be removed. It has been found possible to induce horses to stand during this operation by injecting cocaine into the coronary band when they could not otherwise be made to do so. Give a good broad bearing-surface with the rasp, but leave the sole untouched. If the foot is level when the shoes are removed, lower the toe and heel a little, to produce a sort of rocking surface. This relieves the pressure on the front of the foot, which is the part most affected.

Rocking shoes should be lightly tacked on as soon as the animal can bear the concussion of nailing. These should be seated out so as to have no bearing on the sole, yet wide-webbed to protect it; thinner at toe and heel than in the middle, to give the shape of a rocker. Slight attacks recover in a week or two, but severe ones may last several weeks and result in loosening of the attachment between the sensitive and horny laminæ and the eventual separation which gives that peculiar shape known as a 'pumiced' foot. Besides this, rings form on the wall of the foot. These rings (*see* p. 169), without a dropped sole, will tell the expert that there has been fever in the feet, and that the animal is not sound but of diminished value, although with suitable shoeing and habitual care he may do much useful work.

In Australia, embrocations and hot fomentations are employed, and sodium salicylate internally. Germans there give the homœopathic mother tinctures of belladonna and aconite alternately. Australian farmers use the term 'founder' in a different sense. Horses so affected will not pull, and the trouble is really rheumatism. It generally occurs in winter, and is relieved by two-drachm doses of sodii salicyl. and stimulating liniments, keeping the animal warm.

Capped Hock is an unsightly enlargement on the point of the hock. It is at first soft and fluctuating, and at this stage treatment yields the best results. It is seldom a cause of lameness, but, taken in conjunction with other blemishes on the hind legs, it may mean vice; if not kicking in harness, it may indicate a restless animal that kicks the stall post or his companions instead of sleeping at night. It may be, and is generally, caused by insufficient bedding or a habit of scraping away the litter, and so bruising the hocks upon the floor of the stable. It is often associated with rubbed or sore places in the hollows outside the hocks, which are hollows only when the horse is standing or the rubs would not take place at that part.

An application of equal parts of distilled water and soap liniment is suitable if daily employed with gentle massage, but the following has proved even more serviceable :—

Tinct. Iodi	℥j.
Lin. Saponis	℥ij.
Aquæ	℥ij. M.

Repeated blisterings sometimes cure, but at other times only make the skin thicker and the hair coarse. Removal of the cause is the chief thing to be attended to, as many capped hocks subside without any treatment at all. If capped hock is due to lying without bedding, as a great many animals do, put pads on hocks. If it is hard and callous and of long standing, it had better be submitted to as a permanent eyesore.

Splints are bony growths found upon the inside of the forelegs very frequently, but occurring also on the outside and less often on the hind limbs. They are deposits of bone upon bone, brought about by inflammation of the periosteum or bone-secreting membrane which covers the splint or splent bones as well as others. They are so common on the inside and between the knee and pastern as to excite little comment, and the majority of horses have them at some time in their lives. It is during the formation of them, when the membrane is inflamed, that lameness results, and it usually passes away when, to use a common term, they become callous. Theoretically they constitute unsoundness, but the best veterinary surgeons decide rather upon their position on the limb, the age of the horse, and other circumstances, when passing such animals with a certificate of practical soundness. If a young horse of four or five years is being purchased from country work for trotting on the stones, the examiner would hesitate to pass a splint ; seasoned horses are well known to suffer but seldom, and therefore need not be rejected for splints, if situated well forward so as to be out of the way of the tendons and not likely to be struck by the foot of the opposite leg and not too high up, as near the knee is the worst of all situations.

The lameness is not always easy to diagnose by the manner in which the horse goes, but it generally comes on when he has been out some time, while foot lamenesses frequently get better on the road—warm up, as it is called. If lameness is caused by a recent or newly formed splint, the animal should be taken off work and given a dose of physic, proportionate to his size, cold applications of ammonium chloride ℥j. in water ℥xx. on bandages for two or three days, then, if the inflammation has subsided, he may be given a week's rest and again put to work, but if he fails, or if the cooling method does not succeed, it will be better to blister him with hyd. biniod. 1 part, vaseline or

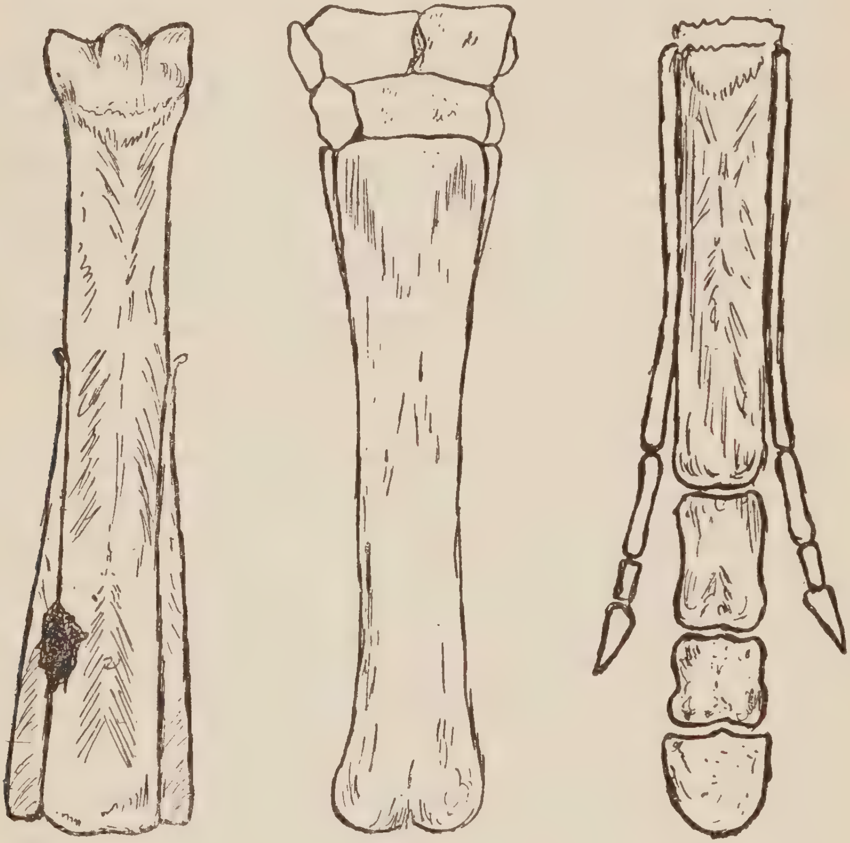

FIG. 23.

CONDITIONS OF LEG BONES IN SPLINTS.

lard 8 parts. At least a month's rest should be allowed after blistering before putting a horse to work. Splints are often absorbed, and are always greatly modified, by painting with a solution of 1 dr. of corrosive sublimate in an ounce of rectified spirit or with tinct. iodi twice a week. Sometimes old splints are wakened up by sellers who try blisters to get rid of them. If they do not cause lameness they had better be left alone, on the principle of 'letting sleeping dogs lie.'

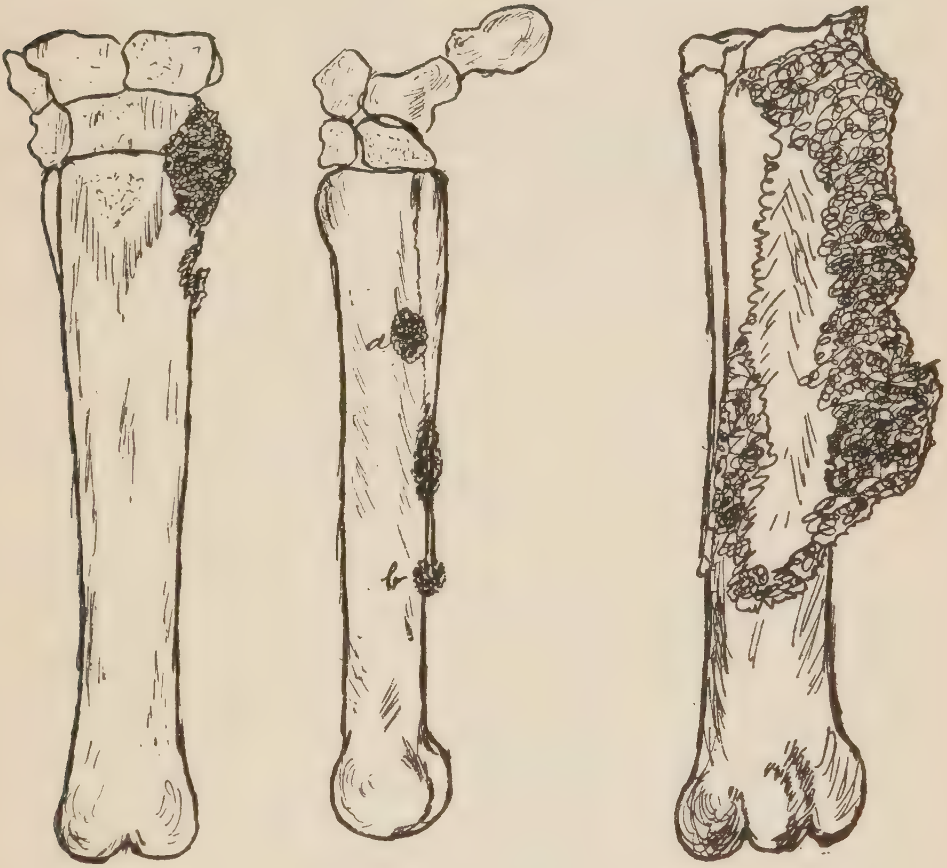

FIG. 24.

CONDITIONS OF LEG-BONES IN SPLINTS.

Sore Shins is also a periosteal inflammation, and brings about a bony deposit ; it is more often met with in racehorses than in others. The treatment is the same as for splint, but the trouble is often difficult to cure. The ailment should be treated as a common wound at first. If inflammatory, a poultice over the part is generally effectual ; follow up with any of the cooling and healing lotions.

Speedy Cut is caused by the animal striking the opposite leg with its foot in trotting. It is dangerous to ride a horse susceptible to this, as such an animal is very liable to stumble and fall.

Treatment.—Shoe accordingly. Do not put the horse on its full pace, unless in galloping. The usual cooling lotions are generally all that is required.

DENTITION OF THE HORSE

THE periods at which the teeth of animals are cut and the appearances they present are so regular that for the most part their ages can at first be easily told. When a horse is past seven years his age cannot be told with certainty, though good judges can form an approximate idea by the signs of wear and altered position of the teeth.

Dentition Table of the Horse

Cut	Incisors	Molars
At birth . . .	—	—
,, 3 months . .	Central pair temporary	4 or 6 temporary
,, 6 ,, . .	2nd ,, ,,	—
,, 9 ,, . .	3rd ,, ,,	—
,, 12 ,, . .	—	—
,, 1 year 9 months .	—	4th pair permanent
,, 2 ,, 6 ,, .	—	5th ,, ,,
,, 2 ,, 9 ,, .	Central pair permanent	1st and 2nd pairs permanent
,, 3 ,, 6 ,, .	—	—
,, 3 ,, 9 ,, .	2nd pair permanent	3rd and 6th pairs permanent
,, 4 ,, 0 ,, .	Ditto in the male	—
,, 4 ,, 9 ,, .	3rd pair permanent	—

The adult horse should have forty teeth. At the birth of a foal the first and second grinders or molar teeth have already broken the gums, and at the end of a week, if not sooner, the first pair of temporary incisors make their appearance; within six weeks the next or lateral pair come through, and the outer lateral or last pair come through between the sixth and ninth months. The molars are meanwhile making progress, but for telling a colt's age the 'nippers' or incisors are a sufficient ordinary guide. The number (six) being complete in the upper and lower jaw, no further changes beyond wear upon the surfaces take place until the permanent teeth begin to come. A yearling may, however, be distinguished from a two-year-old by a glance at the teeth;[*] at one year they appear to be the

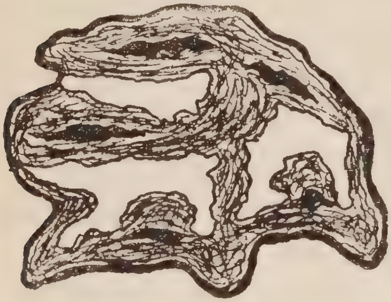

FIG. 25.
Transverse Section of Molar.

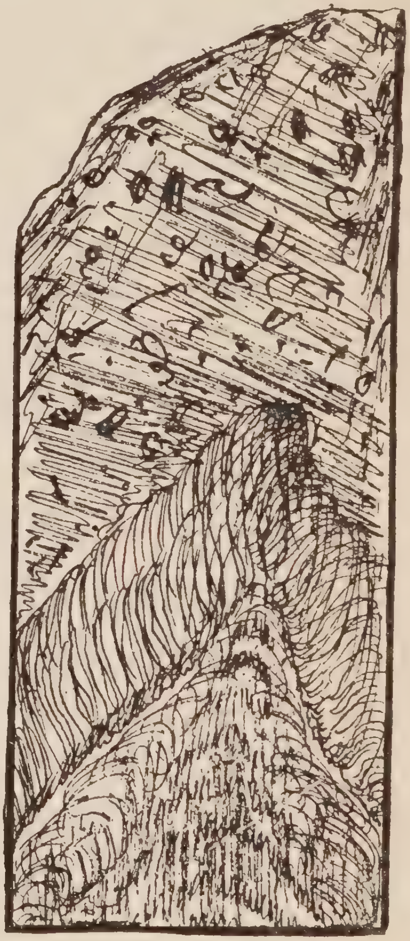

FIG. 27.
Longitudinal Section of Horse's Molar Tooth.

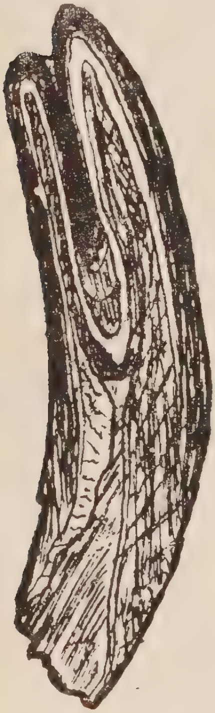

FIG. 26.
Longitudinal Section of Incisor.

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[*] A shorter tail with a disposition to be curly is marked in the yearling.

right size for his mouth, or at least not too small ; they are even and approximately the same size, though not actually,

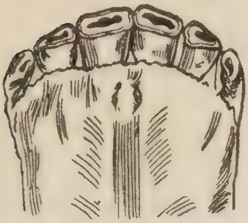

FIG. 28.

Front Teeth at Three Years Old, showing two Central Permanents much larger than the remainder.

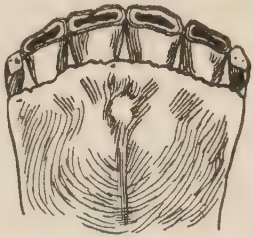

FIG. 29.

Four-year-old Mouth, showing four Permanent Incisors. The corner ones ready to be shed.

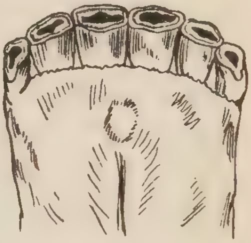

FIG. 30.

Five-year-old Mouth. All the Permanent Teeth up, but the Corners not fully developed, the black marks being largest in the two Centrals.

or in the mouth of the foal, as well as the adult horse, the central nippers are always larger than the rest. In a two-year-old the mouth has grown too big for the teeth, and they look

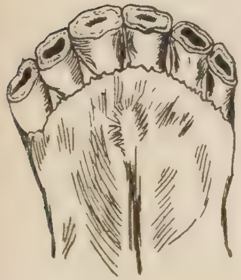

FIG. 31.

Six-year-old Mouth. The Corners fully developed and the two Centrals beginning to lose their black marks.

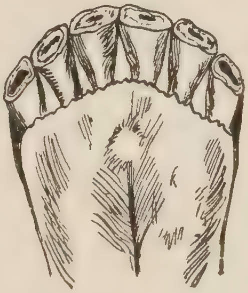

FIG. 32.

Seven Years Old. The black marks fast disappearing from all but the Corner Teeth. (Compare with Six and Five year old Mouths.) The Teeth are longer and Interdental Spaces wider.

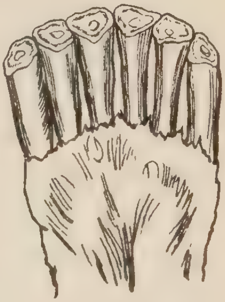

FIG. 33.

A very Old Mouth. Teeth long. Tables triangular. Interdental Spaces increased. Infundibulum gone and only an irregular mark in centre left. Jawbone narrower.

small and worn on the crown, and spaces are beginning to form between the fangs. We are speaking, of course, of the common appearances, but there are instances of colts being so well developed in frame and the teeth so regular that they have been sold for five-year-olds with complete mouths.

The permanent nippers are larger, and intended to bear more wear. The first pair should displace the central temporary ones at from two and a half to three years. The absorption of the fang of the temporary tooth is usually advanced enough at two and a half years to cause it to fall out and the permanent tooth to break the gums. The greater size of these teeth enables one to distinguish at once an animal in its third year. The next pair of incisors are cut a year later, at about three and a half years, and the last pair at about four and a half years, so that at five years the mouth should have all the teeth present, though the outer ones will still be imperfect or shelly. It will be seen from the foregoing that it is really very easy to distinguish youngsters from one to five years old by the number of the teeth, temporary or permanent, yet there are many experienced coachmen and horse-keepers who do not possess this knowledge. When the incisors first attain their growth they have a slight concavity on the crown, which is filled up with black-looking material; this will be seen in the foal's teeth as well as the permanent, but is much more marked in the latter. These concavities with their contents disappear with wear, for it must be borne in mind that horses' teeth keep on growing all their lives. As the central pair are the first to be developed, they soonest lose the markings; the process does not generally occupy longer than a year, making the six-year-old mouth differ from the five-year-old by having the marks gone, or nearly so, from the two central, while the outer laterals have grown up level with the rest. At seven years the second pair have lost their markings, and only the last or outer laterals retain the mark, which after this time gradually disappears, the horse being aged seven or over. These remarks apply equally to mares and geldings, but the latter have four additional teeth, called tushes or tusks, which have no particular function to perform, and are, according to the evolution theory, the last link with the past, when horses were tapirs or something else. The tushes * come through at about the same time as the last pair of incisors; they are at five years old on a level with the nippers for length, and the inside surface is concave while the outside is convex, the point being sharp. The age of geldings when past seven is more or less ascertainable by the shape of these teeth, which is not the case with mares, in whose mouths they are often found in a rudimentary state. As age advances, the point of the tush loses its sharpness, and the inner surface its concavity, so that it becomes round. In some old horses it remains rounded and blunt, while in others the position changes, till, in extreme old age, the tushes point outwards like those of the boar.

With very little trouble an amateur may learn to distinguish between colts up to five years old; it is the varying degrees of attrition and retention of the black marks that deceive any but experts. We have known a very old horse retain a five-year-old corner tooth, as the outer laterals are called, because the tooth has never been fully developed or received any wear from the corresponding teeth in the upper jaw. Not a few disputes as to the age of horses occur even among the best veterinary surgeons; hence it may be concluded that the signs herein described are not absolutely infallible, though the great majority of horses cut and also wear the teeth in the manner indicated.

There are a good many devices for making colts look more than their age, such as extracting the temporary teeth, but no one sign should be trusted. The general development and the time of year should be taken into consideration. For convenience of reckoning all half-bred horses date their birth from May 1, and thoroughbreds from January 1. The latter may be and are foaled at all times, but the intending racer gains advantages by being born early in January, and getting classed as a yearling or two-year-old with others born later in the same year. The half-bred horse, by which we mean everything but the race-horse, is reckoned from May 1, because the majority of foals are

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* They are more developed in entire horses.

dropped between April and Midsummer, and May is approximately the birth month of them all—the colt has all the summer before him at grass, and his dam makes plenty of milk, and enjoys idleness at a time of year when her owner can keep her cheapest. It is also the period dictated by nature.

Assuming that the difference between a foal under a year and a two-year-old is recognisable, let us now parade a two or three, a four or five year old horse in the early spring when buying in for the summer work. The two-year-old will have a complete set of incisors, but no tushes, whether mare or gelding. They are not large enough, and are too much alike, and he must be rejected. The three-year-old will have two permanent teeth in the lower jaw very much larger than the others, quite sufficient in itself to prove that he is a three-year-old. The four-year-old will have four permanent teeth in the lower jaw, and a milk tooth at each end, looking so very small by comparison with the rest that one can hardly be pardoned for mistaking a four-year-old mouth when once seen. The five-year-old will have a full mouth, all the black marks showing, and the corner nippers not fully developed.

We have commenced our examination of the horses in the spring, and they are then said to be 'rising' 2, 3, 4, 5, 6, or 7 years old, as the case may be. After the month of May, they are said to be 2, 3, 4, 5, or 6 'off.' These terms are rather confusing to beginners, but they are expressive. For six months after a birthday, a horse is so many years 'off,' and for the next six months he is 'rising' so many years.

In the early years of a horse's life, the seller is anxious to make him look older, and in his later years younger. The latter process is called 'Bishoping,' from the fame of a certain scoundrel by that name, who reduced it to a fine art. Old horses are palmed off as seven years old by digging out the crowns of the corner nippers, and plugging them with black composition so as to represent the original infundibulum. Practitioners of this art do not commonly take the same trouble with the upper incisors, which should be looked at and compared if there is any doubt. Some horses, whose lives have been spent largely at grass, will retain a very youthful set of teeth up to a dozen years old, and these are usually the subjects chosen for 'Bishoping,' though some bold operators take the trouble to cut and rasp down the long teeth of a very old horse, preparatory to stopping them. These tricks * are not so often practised now as formerly, when certain gipsy-bred copers used to make a regular business of 'setting' broken-winded horses, and 'puffing the glims,' and 'Bishoping' old screws, exciting them with torture, and making them carry their heads up and cock their tails by 'figging.'†

When colts are troubled with indigestion, or the gums are inflamed, or the eyes are weak during dentition, or if the horse loses flesh without an apparent cause and slobbers when drinking, attend to the teeth—extract or file.

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* Since the earlier editions of this book were published there has been a recrudescence of 'Bishoping,' which has been reduced to a fine art by the invention of tools as well suited to the work as the burglar's jemmy or skeleton keys to housebreaking.

† 'Puffing the glims' means the introduction of a fine tube into the hollow above the eye, and blowing out to make it round and full. 'Figging' is the introduction of ginger into the rectum just before showing the horse; the irritation and excitement produced by it lend for the time an animation which may be mistaken for the fire of youth.

DISEASES OF CATTLE

Although we do not profess to give anatomical details in this work, it may be of service to describe briefly the process of digestion in the ox, as illustrated by the accompanying diagrams. The ox is liable to choking by attempting to swallow a piece of turnip or other food too large for the gullet. A stout new rope is often made to do duty where no proper probang is available, and if the resistance is not great may succeed. Cow-keepers should, however, be warned against the dangerous practice of employing a cart whip, which has a knack of coming undone at the thong and getting left in the gullet. A probang and gag should always be at hand where cattle are kept.

From the gullet the imperfectly masticated food passes into the *rumen*, paunch, or first stomach, where it is macerated for a time before being returned for a further grinding (chewing the cud). Sometimes the rumen is overloaded, and the animal moans, the flanks swell, and much danger exists. The probang has to be used, or perhaps the stomach-pump, after injecting fluid to dissolve the food, or in some cases it becomes necessary to make an incision and to remove the food by the hand. A more easily dealt with trouble is tympanites, or hoven (p. 192), which results from an excessive evolution of gas in the rumen. Besides the treatment detailed in that section, a simple and often effectual remedy is a dose of two drachms of chlorinated lime mixed with half a pint of water. The function of the second stomach (*reticulum* or honeycomb) is further to prepare the food for re-mastication. After the second chewing the food passes into the third stomach, or *maniplies*, which consists of a series of leaves which triturate the food into a state of division, and thence into the fourth stomach, in which true digestion takes place.

The order in which the food is received into the various stomachs is not very clear, but from the slaughter of an animal in the act of feeding Professor Simonds infers that the above is the correct one. A single experiment upon one kind of food is, however, scarcely conclusive, as pocket-knives and bunches of keys have been found in the rumen after months and years, and there is reason to suppose that the stomach of the cow has some power of selection like that commonly accorded to the pylorus or intestinal opening of the stomach in man, which rejects a foreign body time after time and finally allows it to pass.

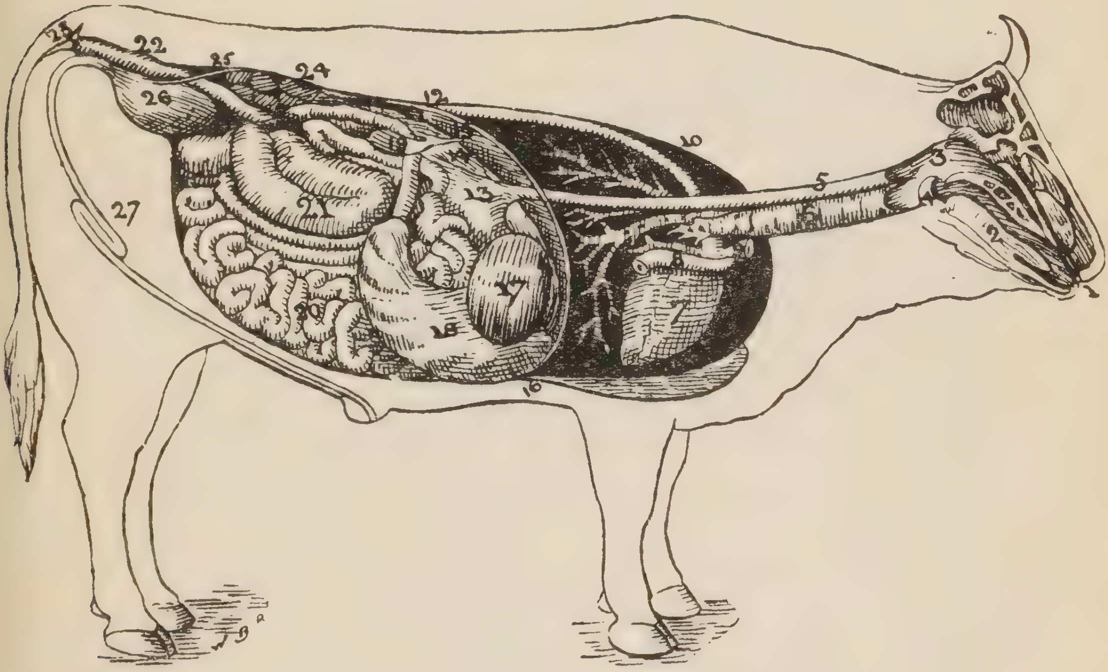

FIG. 34. INTERNAL ORGANS OF THE OX.

1, Mouth; 2, tongue; 3, pharynx; 4, epiglottis; 5, œsophagus; 6, trachea, or windpipe; 7, heart; 8, anterior vena cava; 9, anterior aorta; 10, posterior aorta; 11, bronchial tubes; 12, diaphragm; 13, cardiac orifice; 14, liver; 15, rumen, or paunch; 16, reticulum, or second stomach; 17, omassum, or third stomach; 18, abomassum, or fourth stomach; 19, gall bladder; 20, small intestines; 21, large intestines; 22, rectum; 23, anus; 24, kidney; 25, ureter; 26, bladder; 27, penis, or urethral canal.

Dentition of the Ox

Cut	Incisors	Molars
At birth . . .	2, 6, or 8	12
,, 6 months . .	—	4th permanent
,, 12 ,, . .	—	5th ,,
,, 1 year 9 months .	Central pair permanent	—
,, 2 ,, 2 ,, .	—	1st, 2nd, and 3rd permanent
,, 2 ,, 3 ,, .	2nd pair permanent	—
,, 2 ,, 9 ,, .	3rd ,, ,,	—
,, 3 ,, 3 ,, .	4th ,, ,,	—

There are no incisors in the upper jaw of the ox, and the tushes are looked upon as the 4th pair of incisors.

Constipation.—Horned stock are subject to constipation when stall-fed or yarded in winter upon dry food. In wet seasons, when bad hay is made, it cannot be sold, and has to be disposed of upon the farm; consequently the farmer has to feed his store stock if he has any, or, still worse, his cows with it. When flavoured with some of the popular condiments, animals will eat it, only to become distended, dyspeptic, and 'dung-bound,' or 'fardel-bound,' as the expression goes; 'clue-bound,' 'the grunts,' 'stoppage,' etc., are varieties of popular description all having much the same meaning, and referring to the impaction of the third stomach, or omassum. The first stomach, or 'paunch' as it is called by the butcher —'rumen' by the anatomist—is very seldom the seat of impaction; its contents are generally soft and fluid, and it is more liable to distension by gases than to become dry and solidified. Nevertheless, such a condition is occasionally met with. The disease or derangement of functions with which we have at present to deal concerns the third stomach, which is called 'omassum,' 'fardel,' 'maniplies,' and many other names, and contains an arrangement of leaves, between which the partially digested food is always found in a comparatively dry condition in the slaughtered animals at the shambles. The surface of these leaves taken together is very great, and they are covered with papillæ. The attachment of the membrane is extremely delicate, and can be rubbed off with the finger and thumb. This being the case, it needs but little irritation from retained and dry ingesta to produce very serious local and afterwards constitutional disturbance. The causes are generally said to be chills, sudden changes of temperature, want of water, greedy feeding after enforced abstinence, dry and innutritious food, eating of acorns, etc. These may be among them, but such cases are not infrequent with stall-fed animals with a tank of water beside them and a warm shippon or byre, so that any form of indigestion may lead up to it, and what more likely than indigestion among animals living such an artificial life as a tied-up cow or a fatting bullock?

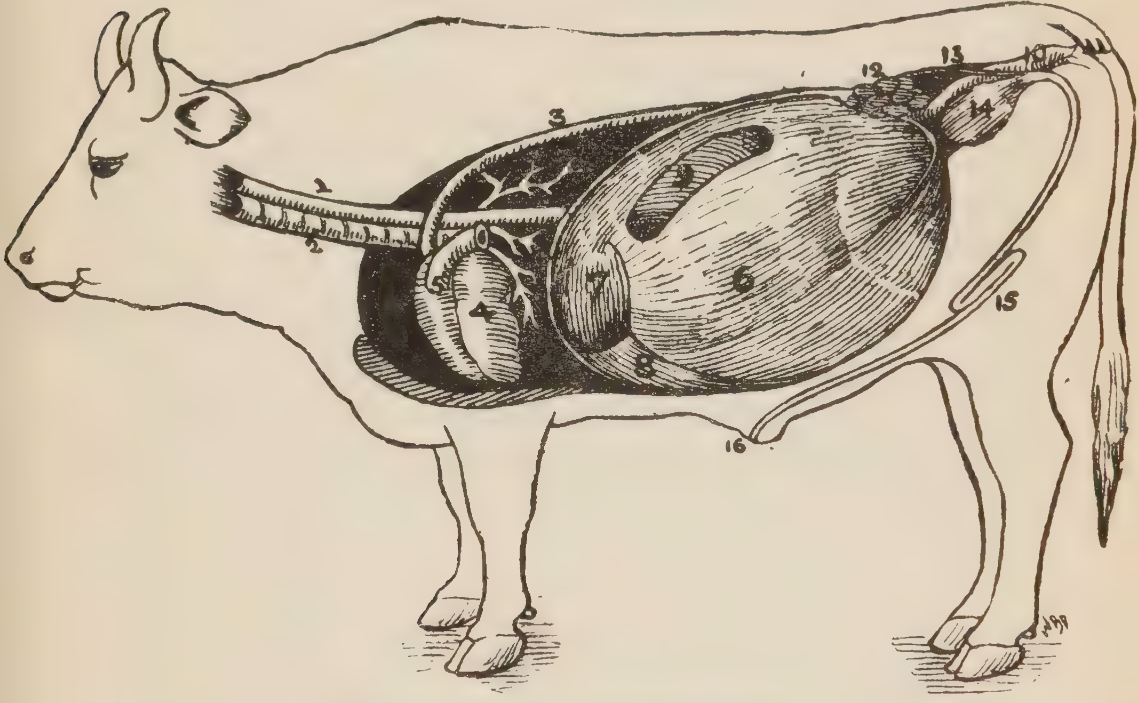

FIG. 35. INTERNAL ORGANS OF THE OX.

1, Œsophagus; 2, trachea; 3, posterior aorta; 4, heart; 5, posterior vena cava; 6, rumen, or paunch; 7, reticulum, or second stomach; 8, abomassum, or fourth stomach; 9, rate; 10, rectum; 11, anus; 12, left kidney; 13, left ureter; 14, bladder; 15, penis: 16, sheath.

To diagnose this complaint is not always so easy as might be supposed, as it is sometimes accompanied by a kind of diarrhœa of a very offensive nature. If there is obstinate constipation, a drum-like condition of the abdomen, staring coat, dull, heavy expression, loss of cud and of appetite, and at each expiration a grunt is added, it will be pretty safe to assume that impaction is the cause. There is also tenderness over the region in some cases, and knowing ones think they detect it by the sudden flinching of a bullock when pinched on the back above the shoulders. This feature is an assistance to diagnosis in some other diseases, especially lung and liver disorders. When the diarrhœic symptom presents itself a careful examiner will find that the offensive excreta are a thin liquid running through more hardened matter which adheres to the sides of the bowels. Such a condition is known to stock-owners and veterinary surgeons as 'bound forward,' which is literally the case : a fermentative diarrhœa is going on behind as a result of plugging in the anterior part of the digestive apparatus.

Treatment.—This must, of course, be directed to the immediate removal of the long-retained and fermented food. A bold aperient should be given, although signs of inflammation are imminent and the temperature rising, for without dislodging the impact recovery is impossible. A good dose is the following :—

Aloes Capensis	℥iss.
Pulv. Zingib.	℥j.
Mag. Sulph.	℔j.
Boli Armen. vel Pulv. Curcumæ . .	q.s.

To be mixed with a quart of boiling ale or gruel, and given while still warm.

The cow-shed or farm premises do not, as a rule, afford much facility for mixing up medicines, and the above appears a clumsy way of giving a drench ; but most hinds are used to powder-drenches, and prepare them by pouring the boiling liquor upon the powder in a jug, stirring the while.

Old-fashioned folks still prefer a horn for administering medicines to stock, but a champagne bottle is much more convenient. The former is easily slopped over and still more readily knocked over, by the patient, while the danger of breaking the neck of the bottle in the animal's mouth is slight.

If the above dose does not move the bowels in ten or twelve hours, large quantities of hot water should be horned down (if the animal does not drink it), and 2 lbs. of treacle mixed with a pailful of hot water and given every two hours. Some practitioners depend entirely on repeated doses of linseed or castor oil.

In this disease, when oil is to be given, ol. crotonis ♏x.–♏xx. in a bottleful of linseed oil and ℥ij. S.V.R. often proves effectual. Good results have also been obtained from either of the following :—

I.		II.	
Aloes Barb.	℥j.	Aloes Barb. . . .	℥j.
Cambogiæ	℥j.	Sapon. Castill. . . .	℥j.

The addition of a drachm of calomel to either of the above is of great value, as it stimulates and increases the flow of bile. Arecoline and eserine given hypodermically, after a brisk purge, very often prove effectual.

Castor oil is not so satisfactory in action as linseed oil, and constipation is more likely to recur at no distant period, while linseed oil is food as well as medicine, and many animals will eat it when poured over their chaff or bran. In one large establishment each bullock has a pint of it in this manner twice a week, and the herd has been remarkably free from digestive derangement.

If there is prostration with the stoppage, evidenced by cold horns and legs and hanging head, stimulants and cordials can with advantage be added to the foregoing. If the medicine is to be sent out as 'drinks,' a good combination is as follows :—

Ol. Tereb.	℥j.
Tinct. Capsici	℥ss.
(vel P. Capsici	ʒss.)
Ol. Lini ad	Oj.

M. ft. haust. To be given every two hours.

The measure of purgation necessary will be best estimated by examining the fæces, which the stockman should be directed to put by. If hardened, darkened, slimy lumps are observed surrounded with loose dung, and the bullock has since passed dung that is *all* soft, then the aperients should at once be stopped, and nourishing cordials given with gruel, and bran mashes or other soft and easily digested food ; but a little hay must be allowed, as a sick animal can scarcely recover his cud without a small allowance of long food. The following, given on alternate days for a week, will greatly facilitate recovery, and, if a cow, restore the secretion of milk ; with a steer or fatting-beast it will enable him to pull up again and lay on flesh.

Potass. Nit.	℥ss.
Pulv. Fœnugræci	j.
Sodii Chlorid.	ʒiv.
Pulv. Gentianæ	℥j.
Pulv. Carui	℥j.

M. ft. pulv. pro haust.

To be mixed with two or three pints of ale or gruel, and given warm at night.

A gradual return to the ordinary diet should be enjoined, and a lump of rock-salt put in the manger to lick at will.

If the beast has not been treated at an early stage, and is in butcher's condition, it is better to slaughter him, as the carcase is quite fit for food, and if the owner has any doubts it will prevent a loss by obtaining a qualified veterinary surgeon to certify the carcase.

For the relief of constipation produced by bad hay or long-continued dry fodder, we advise several doses, at intervals of a day or two, of the following as a suitable drench—not a scientific, but often a successful combination :—

Sodii Chlorid.	℥iv.
Magnes. Sulph.	℥xij.
Pulv. Zingib.	℥j.
Pulv. Carui	℥j.
Pulv. Gentianæ	℥j.

M. ft. pulv. pro dosis.

To be given with a pound of treacle and a quart of hot beer, or thin gruel, on alternate nights till the desired result is obtained.

A good cattle-spice after this will be of great assistance; most of the popular cattle-spices are of value as aids to digestion, especially after an illness in connection with the digestive apparatus.

Chronic Indigestion.—This is generally due to bad feeding, and is manifested by sour mouth, dry cough, mucous membranes yellow, hide-bound, and languidness. It often leads to osteo-porosis.

Treatment.—Aperients, followed by vegetable tonics and antacids, and nutritious food.

Scouring, or **Diarrhœa, in Calves.**—On p. 50, in dealing with cordials for treating this ailment, special reference is made to the infectious skit, scour, or diarrhœa of calves, and the investigations of Professor Nocard into that source of serious loss to stock-raisers. His recommendations are embodied in a pamphlet (No. 11), which can be had free of cost and postage from the Secretary of the Board of Agriculture and Fisheries, Whitehall Place, London, S.W. The recipes given here are intended for ordinary cases of diarrhœa, or purging, arising out of indigestion due to unsuitable food, long abstinence, the giving of cold skimmed or separated milk, and other hardships common to hand-reared calves. The old-fashioned remedy of opium and chalk, and cordials such as aniseed, fenugreek and cumin, have much to recommend them, and will bear scientific examination—indeed, it is a puzzle to modern scientists how the illiterate class of men who have for ages practised with considerable success among animals could have found out remedies without knowing the why and the wherefore, seeing through a glass darkly, yet attaining their object. Of course they were illumined from time to time by medical men and others of better education; but practitioners of that class who remain resent fresh ideas, and are dying out in competition with the better-trained veterinary surgeons of the present day. In treating non-infectious diarrhœa it is good practice to give a dose of castor oil, from half an ounce to two ounces, before resorting to any astringents.

There are matters to be got rid of, and the after-effects of castor oil are distinctly astringent.

Infusions of astringent barks, such as oak and elm, will often answer the purpose where the chalk and opium seems too clogging, but the admixture of a fourth part of lime-water with the milk has the recommendation of being cheap and easy of administration, as well as effective. Care should be taken that the milk given to the calves is sweet. The following are very good mixtures for general use among calves:—

Pulv. Opii	gr. v.
Pulv. Catechu	℈ij.
Pulv. Cretæ Præp.	ʒij.
Ol. Anisi vel Ol. Menthæ Pip.	♏iij.
Mucil. Acaciæ	℥j.
Aq. ad	℥ij. M.

To be given in gruel and repeated next day if necessary.

Cretæ Præp.	℥ij.
Pulv. Catechu	℥j.
Pulv. Zingib.	℥ss.
Pulv. Opii	ʒij.
Aquæ Menth. Pip.	Oj.

Dose: ℥j. night and morning.

Tinct. chloroformi et morphinæ, B.P., is preferred to opium by many advanced practitioners.

An old and very effective cure for scour in calves, and one much used in Australia, consists of a tablespoonful of grated beef suet, a pint of milk, and half an ounce of ginger, boiled, and given in one dose. Two doses usually suffice. Another good remedy is—

Chlorodyni	ʒij.
Sodii Bicarb.	ʒij.
Æther. Sulph.	℥j.
Spt. Vini Rect.	℥j.
Aquam ad	℥xij.

A wineglassful to be given daily in boiled milk or flour gruel.

Where some amount of blood is passed with the excreta a bismuth and acacia mixture may be prescribed, preference being given to the subcarbonate or subnitrate over the liquor.

Colic is seldom met with in cattle, but when it occurs it should be treated as directed for the horse.

Jaundice, familiarly known as the 'yellows,' is of frequent occurrence among cattle as compared with horses. It is most often seen a few weeks after calving. The yellowness of the skin and membranes occurs as in other animals, but is not so easily recognised in good 'butter cows,' as their skin is normally yellow. There is an unthriftiness about the coat and a rapid loss of flesh and failure of milk, nausea, loss of appetite, imperfect digestion, pain when the right side is pressed, irregularity of bowels; sometimes the animal is constipated and at other times passes frothy dung, containing 'bubbles.'

Jaundice is not a disease, but a symptom: it may be expressed as a diseased condition of the liver with congestion or inflammation. The pulse is accelerated and fæces dry or coffee-coloured owing to re-absorption or non-secretion of bile. In non-secretion there is only the colouring matter of the bile in the urine, in re-absorption there are the bile acids and all the other constituents.

Treatment.—For non-secretion give aloes and liver stimulants; for re-absorption a slight aperient—*e.g.*, magnes. sulph. In young stock jaundice is a symptom of degeneration of the liver due to overfeeding and want of exercise. One of the most successful cow-doctors of the old school placed his faith in the following; it is not at all orthodox, but he obtained much credit for it :—

Calomel.	ʒj.
Aloes Socot.	℥iss
Mag. Sulph.	℥x.
Pulv. Zingib.	℥j.
Pulv. Curcumæ	℥j.

M. ft. pulv.

This was given in a quart of hot ale, and forty-eight hours later the following dose was administered, and continued on alternate days for a fortnight :—

Potass. Nit.	℥ij.
Pulv. Zingib.	℥i.
Pulv. Gran. Parad.	℥j.
Bol. Armen.	℥j.
Mag. Sulph.	℥viij

M. ft.[pulv.

To be administered in hot ale. We cannot follow the science of this treatment, but have found it answer better than any other in a large number of cases. The following may often be found useful in jaundice cases :—

Ammon. Chloridi	ʒiv.
Pot. Bicarb.	℥j.
Pulv. Zingib.	℥j.

M. ft. pulv. One to be given night and morning in a little gruel.

Tympanites, or **Hoven.**—After months of stall-feeding or dry food in yards, horned stock welcome the change to green food with greater joy than discretion, and it is generally at this time of year that tympanites is met with. It is called, in various parts of the country, the hoove or hove, blown, the blast, hoven, fog-sickness, etc. This distressing complaint presents no difficulty in diagnosis, as the belly is distended to an enormous size. Red clover and vetches more often produce it than other green stuff, but where cattle break their fences and get into young and abundant green food, and overgorge themselves, there is always danger of their becoming hoven —rapid fermentation and decomposition of the food is the result, and carbonic acid gas and sulphuretted hydrogen are generated in enormous volumes. The diaphragm, or midriff, has been known to be ruptured either from the pressure or in falling, and the respiration is invariably short and difficult, through the diminution of the chest capacity caused by the bulging forwards of the diaphragm. There are, of course, degrees of tympany, or hoven, and instead of an acute attack it will sometimes develop into a chronic state of dyspepsia, the flank being always like a drum and the eructations offensive, instead of being like a perfume, as in health. If the acute form is to be dealt with, the treatment should be directed at once to diminishing the volume of the paunch by giving such chemical agents as will decompose carbonic acid gas and sulphuretted hydrogen into harmless products, and prevent further fermentation. Of these agents ammonia is the best, and in the form of aromatic spirit it reduces the volume and acts again in the form of carbonate. It should be combined with stimulants and stomachics to induce contraction of the muscular coats of the stomach. The following are good draughts :—

Spt. Ammon. Arom.	℥ij.
Tincturæ Capsici	ʒij.
Tincturæ Zingiberis	℥j.
Aquam ad	Oiv.

M. ft. haust. statim sumend.

Ol. Terebinth.	℥ij.
Pulv. Zingib.	℥j.
Ol. Lini	℥xx.

Fiat haustus.

The draught may be repeated in half an hour if necessary ; and, failing to relieve in an hour, recourse should be had to the trocar and cannula or the hollow choke-rope. As some readers may not be familiar with these instruments, we now describe them. The choke-rope, or probang, when properly made, is about six feet long, composed of coiled wire with a leather cover, and turned-wood or whalebone ends—somewhat egg-shaped—with a cup-like depression in one of them ; through the whole length passes a whalebone or cane stiletto. To use this instrument, the cow must be secured by the horns and held by two assistants if possible. One should hold her head up, by putting his finger and thumb firmly in the nostrils, while the other grasps the tongue or maintains a gag in position, if the operator is fortunate enough to have one with him. The stiletto should *not* be withdrawn, but the end of the probang should be oiled and then introduced into the mouth, pushing it steadily over the tongue and down the gullet, till it is nearly all out of sight, when the stiletto should be withdrawn. A volume of gases generally rushes out, and the flank falls in like a pricked balloon. But this happy result is not always obtained ; sometimes the food persistently chokes up the instrument, and is not got rid of by repeatedly passing down the stiletto. When this is the case and relief is not obtained, the trocar must be resorted to. This is an instrument about eight inches long, with a point which makes a leech-bite puncture. It is ensheathed in a metallic cannula, with a cup-shaped top, but this does not cover the other end of the trocar, with which the puncture is made. The operation, which is commonly known as 'paunching,' is performed by pushing this sharp instrument right through the left flank into the rumen; the situation to be chosen is between the last rib and the hip, some four inches from the rib; the direction should be downwards, and the force used sufficient to drive home the cannula right up to the cup, withdrawing the trocar and getting out of the way as quickly as possible, to avoid the immense volume of offensive gas which rushes out, extinguishing a candle if it happen to be by night that you are operating. The cannula may be left in for six or eight hours, until remedial agents have reduced or dispelled the gases; and it is very seldom that any trouble is experienced with the wound produced. In cases of emergency an incision with a penknife will often give relief. The following is a suitable draught for the convalescent stage, and should not be omitted, as it is a neglected case at this stage which so often develops into a chronic one:—

Sodii Bicarbonatis	ʒiv.
Infusi Calumbæ Conc. . . .	℥j.
Infusi Gentianæ Conc. . . .	℥j.
Infusi Zingiberis Conc. . . .	℥j.
Aquam ad	Oj.

M. ft. haust.

This should be given daily, and about 1 lb. of mag. sulph., more or less, according to the size of the beast, on alternate days. The remedies should not be discontinued till the dung ceases to show bubbles when freshly dropped.

Another good formula for acute tympany due to the fermentation of grasses, clovers, etc., is—

Sodii Hyposulphit.	℥ss.–℥j.
Pulv. Zingib. et Gentian. . .	aa. ℥j.
Pulv. Nucis Vomicæ	ʒij.

In some animals this disease occurs regularly after food, more especially after turnips. When such is the case it is advisable to give a small portion of the powder before food.

Chronic hoven may arise from other causes, but is usually the result of indigestion. It has been caused by part of a blanket found in a cow's stomach, or rather in the junction of the stomachs, and other foreign bodies are not at all rarely found. In the museum of the Royal Veterinary College are to be seen a bunch of keys, a pocket-knife, an old shoe, and other 'unconsidered trifles' which have been snapped up by cows : we have seen a perambulator apron and a child's pinafore taken out of a cow's paunch, but we have not heard of a baby being lost in that way. As it is impossible to diagnose the presence of foreign bodies in the rumen during life, we can only give those remedies which experience has proved to be effectual in ordinary tympanites, or hoven. When time is not of so much importance as in the acute disease, the agents may be given in powder ; some veterinary surgeons think they act better in that form. The following may be given twice a week, and will prove a 'thriving' drink for cattle when not dyspeptic :—

Potassii Nitratis	℥j.	
Sodii Bicarbonatis	℥iv.	
Pulveris Fœnugræci	℥iss.	
Pulveris Anisi	℥j.	
Pulveris Gentianæ	℥j.	
Magnesii Sulphatis	℥viij.	M.

To be given in a quart of hot ale at night.

This dose will be found to increase the quantity of milk in a cow, but must not be continued for that purpose for longer than a fortnight.

Hæmalbuminuria, or **Red Water,** is now known to be due to a very small protozoal parasite, *Peroplasma bigeminum.* The tick usually remains on the cow for a period of five or six days (the female is said to stay twice that time), the eggs hatching into larvæ, which are absorbed by the blood, breaking up the red corpuscles and setting free the colouring matter of the blood, which is excreted in the urine : hence the name. The urine may vary in colour from a bright red to a dark coffee or even tarry colour. The other symptoms are elevation of temperature, loss of appetite, usually constipation (or maybe diarrhœa), loss of milk, shrinking of vulva, dicrotous or weak pulse, etc.

The treatment is more preventive than curative. Inoculation of healthy from affected animals has been recommended, also the gathering of the ticks and excluding the animals from infected pastures. As to remedies, after an interval, in which the advanced school of veterinarians condemned the farriers' methods and recommended 'tonics and stimulants from the commencement,' a return has recently been made to the old plan, as a German scientist has 'discovered' the advisability of giving a bold dose of aloes and salts, such as our old cow leeches gave two hundred years ago. As much as two ounces of aloes is often given with pot. nit. 1 ounce and mag. sulph. half a pound, or

Magnes. Sulph.	℔j.
Pulv. Aloes	℥j.
Pulv. Zingib.	℥j.

To be given in not less than three quarts of oatmeal gruel.

A tonic stimulant of proved value is the following :—

Æther. Sulph.	℥ss.
Tinct. Gentianæ	℥ss.
Tinct. Zingib.	℥ss.

To be given once or twice a day in linseed tea. An aperient must be given at the outset.

For red-water an Australian remedy is to give a purge of linseed oil 1 pint, and as a drench either of the following :—

Spt. Æther. Nitros.	℥j.
Tr. Opii	℥j.
Tr. Ferri Perchlor.	ʒj.
Aquam ad	Oij.

Make one drench.

Potass. Nitrat.	ʒx.
Antim. Nig.	℥iij.
Pulv. Glycyrrh.	℥ v.

A tablespoonful in bran or mixed with honey and placed on the tongue, every four or five hours until urine is clear.

Care in feeding, especially frequent changes of food, must be attended to. If the animal will not eat, linseed and oatmeal must be given in the form of gruel, together with milk and raw eggs. Fresh air is requisite, but an even temperature should be kept up. No diuretics or astringents are to be used, nor any stimulants applied to the loins.

For further particulars regarding red-water see Leaflet No. 287 issued by the Board of Agriculture and Fisheries, Whitehall, London, S.W.

Cow-pox is a contagious disease accompanied by a febrile state and eruptions upon the teats. It has a period of incubation of from six to nine days. First a pimple or papule, which fills with watery fluid, and afterwards matter or pus; it then breaks and forms a scab, which falls off and the surface heals up. In more scientific language it may be divided into periods of incubation, invasion, papulation, vesication, pustulation, desquamation, and resolution. Its importance arises from its effects upon the human subject. Vaccination is said to have originated from the observation of milkers escaping small-pox after having cow-pox. A minority of medical men and a large number of laymen will not admit the claims of vaccine as a prophylactic against small-pox, but consider the danger of transmitting diseases from one child to another more than counterbalances its benefits, if it have any.

The eruption on the teats, which characterises cow-pox, is accompanied by an uncertain amount of febrile disturbance, sometimes so little that nothing is observed amiss but for the eruption, the scabs of which are often enough rubbed off the teats and into the pail, to be rescued again by the strainer before the 'pure country milk' is sent away. Every precaution is taken by the great dairy companies of London, who send veterinary surgeons from time to time to the farms to inspect both the cows and the milkers, and the supply is instantly stopped where any disease of the kind is known to exist among milkers or milked.

The treatment of cow-pox consists in the administration of a few doses of a saline medicine such as is prescribed below, together with fomentation and application of ung. althææ daily to the teats, unless a tendency to ulceration is shown, when an astringent ointment, composed of 20 grains alum. exsicc. to 1 oz. of lard, should be used, or a lotion of boracic acid ʒj. to ℥x.

Potass. Nit.	℥j.
Potass. Bicarb.	℥ij.
Pulv. Anisi	ʒiv.
Mag. Sulph.	℥viij.

Ft. dosis.

To be given in thin gruel every other night.

The usual form for making *ung. althææ* is as follows :—

Ol. Palmæ .	℔ss.
Resin. Flav.	℔iss.
Ceræ Flav.	℔ij.
Ol. Lini	℔ix.
Olei Myristicæ et Ol. Rosmarini .	q.s.

Collodion is a useful remedy for moist sores which remain after the pock has broken, and in the case of indurated ulcers the article known as *Melbourne collodion*, and containing one of salicylic acid in seven of flexible collodion, may be recommended.

Owners should be advised not to sell the milk, and to keep the animals affected apart from the rest, not allowing the same attendants to minister to their wants, nor using the ordinary tools or utensils.

Variola.—Variola vaccina is a highly contagious and infectious disease, 'affecting man in malign form.' It is seldom seen in bulls, and in cows its chief local effect is on the mammary gland. It goes through various stages, which may be classed as follows :—

First	five	days,	period of	Incubation
Next	three	,,	,,	Papulation
,,	,,	,,	,,	Vesication
,,	,,	,,	,,	Pustulation
,,	,,	,,	,,	Scab
,,	,,	,,	,,	Desquamation of Scab

The scab leaves a cicatrix which is permanent. The milk is watery and tends to coagulate; it is not fit for use.

Parturition.—The cow has a period of gestation of forty weeks or nine months. It menstruates every three weeks, which function ceases when pregnancy begins. It may have the bull repeatedly without result; if so, feed well. The signs of pregnancy are cessation of œstrum, the animal lays on fat, the mammary gland enlarges, there is languidness, and the lower part of the right side is enlarged. This continues until the surest signs of parturition appear, which are swelling of the vulva, relaxation of the ligaments, continued enlargement of the gland, and finally dilatation of the os uteri and discharge of fluids or waters. There is a tendency on the part of cattlemen to regard calving as an event of abnormal importance, and to lose sight of the fact that it is a perfectly natural event. When the presentation is normal nothing should be done prematurely; wait the development of events according to nature. Young animals, calving for the first time, have often to get assistance, but it is wise to observe the various attitudes of old and young, and also have patience. When the presentation is abnormal it must be rectified, and the calf got into the natural position. At times the labour pains cease, or the walls of the womb become inert, in which case pituitary extract is used in subcutaneous injection by vets. The fœtal membranes are naturally expelled at birth or shortly after; if not, a cleansing draught may be given, or the membranes may have to be taken away mechanically. The second cleansing or desquamation of the epithelial cells of the uterus takes place about nine or ten days after birth, and the os then generally closes. A calf cannot live if born before the two hundred and twentieth day or after the three hundred and thirtieth. Among the results of parturition for which advice is sought are—

(1) Flooding, or hæmorrhage, due to non-contraction of the blood-vessels. *Treatment.*—Cold water over the loins, and inject sol. ferri perchlor. in water (1 in 10), or any astringent, into uterus. Repeated doses of adrenaline are effectual.

(2) Eversion of vagina. Put on truss and disinfect. This looks like a tumour: examine carefully. A pessary may be used.

(3) Metritis (*see* p. 209).

(4) Parturient apoplexy (*see* below).

(5) Parturient fever (*see* p. 203).

Milk Fever.—By the name of milk fever, parturient apoplexy, dropping after calving, and the drop, there exists an affection peculiar to recently calved cows. They may be attacked within two hours of parturition, or the disease may appear as late as nine days afterwards. The second or third day would appear to be the most dangerous.

Symptoms.—Uncertain movement of the hind limbs, paddling the hind feet, an appearance of giddiness when standing, and presently going down and there remaining. In mild cases very little more than paralysis of the hind quarters, and inability to rise, may be observed, and this may either pass off or pass on to something very much more serious. The animal becomes insensible, swings its head round to its side, or, keeping it there, lapses into complete coma, from which it may almost suddenly recover, or die with some complication, as pneumonia. The pressure or effect of the toxin varies much in different animals and on different sets of nerves. One will be quite 'blind,' as it is called, because insensitive to objects or touch upon the eyeball. Another, whose pneumogastric nerves are much affected, will make a roaring noise in breathing, and there will be complete suspension of the bowels' action and that of the bladder; indeed, many die, from interference with the innervation of the heart, of heart paralysis. These are the subjects which are left well overnight and found dead in the morning.

Since the earlier editions of this work were published, a complete revolution has occurred with regard to the views held as to the cause and treatment of this disease. The chief symptom, coma, was attributed to apoplexy or engorgement of the spinal column, and depletives and stimulants were prescribed. Cows died under all sorts of treatment, and others recovered sometimes with or without any medicine.

A German veterinarian, Schmidt of Kolding, believing that milk fever is an auto-intoxication induced by the development of some toxin in the udder or milk glands, thought fit to attack the cause and local seat of the malady by injecting into the bag a solution of potassium iodide. He prescribed half-ounce doses dissolved in about a quart of warm water and injected up the four teats, dividing the whole quantity equally between the quarters. His success was great, and the results were published to the world. Everywhere the treatment proved successful, and instead of losing perhaps three out of four cases by death, the proportions were reversed, and veterinarians began to lose their dread of so-called 'milk fever.' By the way, it was never entitled to the term 'fever,' for the temperature is sub-normal, if affected at all—a symptom which in itself pointed to some narcotisation. It was found, however, that the iodide treatment too often left a legacy of trouble in the shape of garget. So many precautions against the introduction of septic matter upon the instrument were necessary, and in a dirty cowshed so difficult of fulfilment, that the treatment by injection of the teats received a slight check for a time. The deliverance from this difficulty came by accident. A vet.'s son left temporarily in charge, and distrusting himself to dispense potassium iodide for an urgent case which came along, thought he would be doing no harm if he supplied a drachm or two of chinosol. He did so, and the patient recovered. The young man's parent published the story, and since then the great majority of practitioners have employed chinosol with even greater success than potassium iodide. A convenient quantity is two drachms in six ounces of water, with instructions to mix with 1½ pint of water at the temperature of the body and inject with a proper apparatus, dividing the amount between the four quarters, or the three in case of a 'blind' one. It is also given internally, as in the following dose, when the fever is first detected :—

Chinosol	ʒj.
Pulv. Zingiberis . . .	℥ss.
Magnes. Sulphat. . . .	℥xij.–℥xvj.

Chinosol being antiseptic does away with the danger of sepsis and subsequent mastitis. As there is nothing incompatible in potassium iodide and chinosol, and some people prefer a double-barrelled gun to a single, bottles may be put up containing, say, half an ounce of the former to two drachms of the latter drug, with recommendations as above, and a note to repeat in six or eight hours if necessary, but not oftener. Signs of collapse should be combated with hypodermic injections of caffeine, or by drenching with large quantities of strong coffee. Chinosol alone produces no depression of the heart.

Much care was at first taken to exclude air when injecting the curative agent. Experience proves that admission of air helps 'oxidation' of iodide, and it is recommended to pump in air after the solution, and massage the udder. Some enthusiasts have been found to advocate nothing but air pumping, and others employ oxygen. The object is completely met by injecting into each teat an ounce of 3 per cent. solution of hydrogen peroxide, which is also an excellent preventive of mammitis. If an aperient is required it should be a simple one, such as—

Magnes. Sulphat.	℥xvj.
Pulv. Zingib.	℥j.
Potass. Nitrat.	℥ij.

To be given in a quart or three pints of warm water. The nitrate undoubtedly helps the flow of milk.

A veterinarian writes :—

> Milk fever usually occurs in cows that calve easily, and generally after third calf. In treating, the catheter must be passed frequently, and tincture of aconite given. Stimulants I consider are essential, and greatly assist in recovery. Bleeding at first stages is also beneficial, air pump the latest remedy to resort to, but like all others each has its own advocates and opponents. This is one of the many cases in which discretion and common sense must be brought into action.

The following is a summary of Australian methods of treating milk fever :—

> Dairying has grown to such dimensions in the Colonies that this disease becomes of vital importance to a large section of the community. A complaint which may carry off some of his best milkers, and change a profitable season into a failure, is, indeed, one to be dreaded by the dairy farmer.
>
> It is important to distinguish between milk fever (parturient apoplexy) and parturient fever—an entirely distinct disease. In the Colonies the symptoms of milk fever appear to be precisely the same as in the Mother Country. Keepers with their first calves are not subject to it, and the second to the fourth day after calving is the most liable period of attack. The chief symptom is paralysis, exhibited by the animal staggering about for a short time, and then dropping, probably to rise no more. Inasmuch as different sets of nerves may be affected in different animals, so may the symptoms vary. Excitement and pokings-out of the head, although comatose, with a complete suspension of the action of the bowels and bladder, seem to be the most common. Insensibility extending to the eyeball is an indication of the gravity of the case.
>
> There are three methods of treatment. The oldest, based on the assumption that the symptoms are caused by apoplexy, aims at the distribution of the blood by purgatives and counter-irritants. Before the cow drops bleeding is recommended, followed by a good purgative drench. The following is a suitable dose ; it should be mixed in a quar or two of hot water, and given when still warm ;—

Aloes Socot.	℥j.
Pulv. Zingib.	℥j.
Magnes. Sulph.	℔j.

A good liniment or mustard should be rubbed on the poll, the sides of the neck, the spine, and loins, the animal being supported on bags of chaff or straw. The body should be kept warm by covering with blankets and well rubbing with the hand. The udder must be stripped, warm soap and water injected, and the catheter used. After the purgative, stimulants should be given every three hours, and an improvement should be noticed after the third dose. A good stimulant is—

Spt. Ammon. Aromat.	℥j.	
S.V.R.	℥iij.	M.

To be given in a pint or more of cold water.

The second method of treatment consists of administering sedatives, notably chloral hydrate. The rationale of this is not clearly understood, but a large measure of success is claimed for it.

The latest treatment is Schmidt's (*see* p. 200). Besides the hiring or sale of pewter syringes and rubber catheters for this treatment, the chemist would do well to push the sale of 'cleansing drenches,' to be administered directly after calving, *e.g.* :—

Pulv. Ergotæ	ʒj.
Aloes Socot.	ʒj.
Pulv. Zingiber.	℥j.
Magnes. Sulph.	℥xij.

To be given in a quart of hot ale or thin gruel within two hours after calving.

Success has attended the administration of chloral in conjunction with Schmidt's treatment. A chemist with journalistic leanings might find it a good plan to write a short article, with the help of 'V.C.P.,' for publication in the local Press. This course, with the advertising of the remedies and syringes, would bring the chemist into touch with his clients in a certain and profitable manner.

Parturient Fever must not be mistaken for parturient apoplexy. It is generally a consequence or sequel of inflammation of the womb, following upon difficult labour, and treatment should be directed both to allaying the local symptoms and to arresting, if possible, the blood-poisoning which constitutes parturient fever. Unlike parturient apoplexy, paralysis is not a marked symptom, but arching of the back and straining, grinding of the teeth and other common symptoms of pain, together with shivering fits, and a *high temperature*, clearly distinguish fever from the apoplexy erroneously called milk fever. We cannot be too careful to explain the difference to our clients, or they will believe our decisions to be based upon mere caprice. Inflammation of the womb commonly shows itself the second day, from that to the seventh or eighth, and parturient fever may develop at almost any time until recovery is assured.

Treatment should be both local and general. If bran poultices can be applied continuously over the loins, much ease will be given, but it is worse than useless to put on a poultice and let it get cold, or allow intervals for evaporation, when a fresh chill may do more harm than poulticing has done good. A little opium sprinkled upon the surface of the poultice helps to allay pain. If the prescriber suspects that poulticing will be but indifferently performed, he had better make up a warm embrocation, such as

Lin. Camph. Co.	℥j.	
Lin. Saponis	℥vij.	M.

Direct this to be applied two or three times a day.

That liniments and embrocations do act upon distant parts beneficially has long been proved by practical men. Possibly, they act upon the superficial nerves in the same manner that the cold wind acts upon the fresh-dropped lamb, sending from the skin a nerve-current. Every cowman and shepherd knows that a calf or lamb will be more likely to live if carried into the fresh air, and nearly all animals are endowed with the instinct to lick their young clean.

The womb should be syringed two or three times a day with a quart of warm water, in which an ounce of the following fluid should be mixed:—

Ext. Opii	℥iss.	
Acid. Carbolic.	ʒiss.	
Glycerini	℥iss.	
Aquam ad	℥x.	M.

Lysol and chinosol solutions are much used by vets. of the modern school.

The following draught night and morning can be recommended:—

Acidi Nitro-hydrochlor. Dil.	℥ss.
Ext. Gentianæ	℥ss.
Spt. Æth. Nit.	℥j.
Aq. ad	℥x.

M. ft. haust.

A nourishing diet should be prescribed, and, if all appetite is lost, gruel should be given, of which linseed should form a considerable portion. Or a simple linseed tea may be administered, if the animal will drink it, and if not she may be drenched with as much persuasion and as little force as possible, since a nostril wounded with the hard nails of the cowman does not induce appetite any more than the fear of another drenching contributes towards digestion. Cows kept in town dairies become used to the inspection of the public which their owners invite; but many country cows are frightened by the approach of a stranger, and alarmed out of all reason if roughly handled when initiated into the art of taking a drink. Some good hay should be provided, and, if not eaten, ought to be removed each day.

Eversion of Rectum generally occurs after parturition, owing to extra pressure and rupture of the ligament.

Treatment.—Clean with 'Soother's Liniment' (milk and water with carbolic acid and tincture of opium), and if required stretch and put on a truss, and remove any membranous portion if present. Also keep the animal well propped up with bedding under the hind quarters. Let the bedding be 6 or even 12 inches high.

Eversion of Uterus or Womb is due to excessive and prolonged labour pains with weakness of the ligaments, which become ruptured or detached. It is no uncommon occurrence for one to get the womb in the vagina or behind the cow when it is unexpected.

Treatment.—Secure the womb and thoroughly cleanse, removing any fœtal membranes present. Foment with milk and warm water, with tincture of opium and carbolic acid (1 to 30), and if considered advisable insert in the proper position a pessary or apply a truss. If necessary a trestle may be put below the animal to prevent it lying down. Keep the bowels open, and give full doses of laudanum—in fact, stupefy the animal.

Abortion is the term generally applied to the expulsion of the fœtus before it is capable of a separate existence, and usually occurs after the third month of pregnancy. The expression is not always correct, however, as the mishap is frequently the result of premature parturition, though it is not easy to draw a distinction between the two. Abortion is considered infectious and contagious (*Epizootic abortion*), and has been investigated by a Committee of the Board of Agriculture and Fisheries, which has reported (*Chemist and Druggist*, 1913, II., 866) on this disease that it is possible to distinguish between cases of contagious abortion in cows and those of a sporadic or accidental character. A high degree of immunity against contagious abortion can be conferred on healthy animals, and protective inoculation has already been employed in a considerable number of infected herds, but the general value of this method of dealing with outbreaks was not finally determined when the report was issued. The anti-abortion serum recommended by the Committee is used successfully and is popular with vets. Serious outbreaks of bovine abortion do not usually occur on the same farm year after year.

The symptoms, in the early months of pregnancy, are very slight, the mother being, perhaps, unaware of the mishap. In the later months, however, there is restlessness, the udder is enlarged and flushed, the vulva capillaries engorged, the ligaments relaxed, and calving pains occur.

For the prevention of abortion the following six rules should be rigidly followed :—

(1) Isolation of aborted cows.

(2) Disinfection of aborted cows—vulva, vagina, uterus, and external genitals.

(3) Cremation of fœtus, afterbirth, litter, and everything possible.

(4) Thorough disinfection of cowhouse and all accessories.

(5) All pregnant cows contiguous to, or which have been in immediate contact with, the affected animal should be carefully and thoroughly disinfected by having the vulva, vagina, anus, thighs, udder, and tail washed with a solution of corrosive sublimate, weaker internally than externally, say 1 in 500 to 1,000 and 1 in 250 to 500.

(6) Doses of the sublimate should also be given internally every second or third day until calving.

The presence of a billy goat in the byre is said to prevent abortion.

The treatment of abortion consists in isolating the cow destroying the fœtus and membranes by fire or quicklime, and thoroughly disinfecting everything with which the discharges could have come into contact. An antiseptic drink—

Sod. Hyposulph.	℥viij.
Acidi Carbolici	ʒij.

—should be given in a quart of thin gruel. The vagina should be syringed out with carbolic acid (1 in 50), or with :—

Hydrarg. Perchlor.	ʒiiss.
Acid. Hydrochlor.	℥iiss.
Aquam ad	Cong. ij. M.

Any other pregnant animals in the herd should each receive carbolic acid ʒss. in a bran mash once or twice a week, and their vulvæ should be sponged with the perchloride lotion.

Retention of the Placenta, or **Cleansing,** is a frequent trouble in the cowshed, and, though very disgusting to the casual observer, is not so often a cause of illness as might be expected. The placenta or membranes in which the calf is enveloped in the womb do not always become detached immediately after delivery, especially if the birth is premature, but a portion hangs out of the vagina, while the greater part, perhaps, is firmly adherent to the womb, by reason of the 'roses,' which give it many points of attachment, and should not be roughly torn away; serious hæmorrhage, and even death, has been know to result from pulling violently at the 'cleansing'—as these membranes are commonly called—when it has been attempted too soon; but more frequently, when the operator performs a day or two later, the part he holds will break off and leave the rapidly decomposing mass behind, without the advantage of outside weight to assist in its mechanical removal.

When the veterinary practitioner is called in, some such bungling as this has often taken place, and he proceeds to dislodge the stinking mass by first injecting copiously with warm water and potass. permangan., or

Acid. Carbolic.	ʒij.	
Glycerini	℥j.	
Aq. ad	℥xl.	M.

and then unfastening the cotyledons or buttons of the placenta (a tender and delicate operation), when it usually comes bodily away, though a little may be left inside. A cleansing draught containing ergot and mugwort should be given, and the womb ought to be entirely clear within a few hours. Traction by weights hung on the placenta should be abolished —in fact, it is regarded as a form of cruelty, since the continuous and steady weight so applied draws down the 'cleansing' on to the valve at the neck or mouth of the bladder and prevents it from opening during micturition, thus causing great pain. In many instances the urine is seen to keep dropping from the animal, and when the weight is removed one can almost imagine that the cow turns round and gives a look of thanks.

All cleansing draughts should be of a soothing and expulsive nature. One that can be relied on consists of linseed oil, spirit of nitrous ether, ergot, and mugwort; the dose being regulated by the size and condition of the animal. At all times care should be taken to give not a drastic but rather an aperient dose.

Mr. T. Cameron, M.R.C.V.S., writing on diseases supervening on calving, says:—

> I have not much faith in medicines internally: it is better to depend on nature and the use of antiseptics if requisite. In cases of hæmorrhage, cold applications and laudanum and ergot internally.

Cleansing Drench (Australian).

Magnesium Sulphate	3 lb.
Diapente (*see* p. 393)	½ lb.
Saltpetre	¼ lb.
Powdered Caraway	¼ lb.
Powdered Ginger	¼ lb.

Mix and divide into six doses.

After difficult labours, the 'shape,' as the external part of the cow's generative organs is called—or 'barron'—though in some districts the latter term has a wider signification—is bruised and swollen, causing some anxiety to the owner (of the vagina as well as of the cow), and should be well fomented with warm water, then dried with a soft old rag, and, lastly, anointed with—

Acid. Carbolic.	℥j.
Ol. Olivæ	℥xx.

Solve.

An injection of pot. permangan. or Condy in warm water, or acid. carbolic. 1, glycerin. 2, et aquæ calidæ 100, is to be recommended. The bowels should receive attention, and any tendency to constipation corrected with repeated doses of ol. lini, which may be 'improved' with a little ol. anchusæ, and 'nosed' with ol. anisi, ol. carui, ol. pulegii, or any carminative or cordial. A very useful 'cleansing drink' suited for keeping in stock is—

Quinin. Disulph.	gr. x.
Pulv. Anisi	℥j.
Sulphur.	℥j.
Pulv. Gentianæ	℥ss.
Pulv. Carui	℥ss. M.

To be given in a quart of thin gruel immediately after calving.

Metritis, or **Inflammation of the Womb**, is frequently met with after parturition. Whilst parturient apoplexy and parturient paralysis are chiefly met with in the cow, metritis affects all animals alike—cow, mare, bitch, sow, and ewe. It was once found in a tame rabbit. It is due to over-fatigue before parturition, wounds and scratches inflicted during delivery, retention of fœtal membranes, cold, septic masses, etc. It may occur within a few hours after parturition or, it may be, the third or fourth day. When its attack is very acute it usually proves fatal. It is often accompanied by peritonitis (metro-peritonitis). The symptoms are elevation of temperature, restlessness, paddling of hind feet, cessation of flow of milk, vulva shrunk, dark purple colour of mucous membrane of vagina ; pressing or straining, discharge of dirty, rusty coloured fluid from the womb ; loss of appetite ; and finally the animal goes down and has no inclination to rise. In ewes this is usually called inflammation. A great deal of it could be prevented, especially in ewes, by the accoucheur being more particular with his hands and clothes at the lambing season.

Treatment.—Thoroughly cleanse and disinfect the womb. The following has been found to be a great success :—

Ol. Lini	℥vj.	
Acid. Carbol.	ʒiij.	M.

Inject into the womb twice daily, after washing out thoroughly with solution of potassium permanganate.

Stimulants may be administered. Use hot fomentations or poultice over the part. Give fever mixture—for mares in drinking water preferably. A mild aperient may also be given, but on no account purge.

The following parturient antiseptic should be injected into the womb immediately after calving and when the fœtal membranes come away :—

Ol. Terebinth.	℥iiss.
Chloroformi	ʒvj.
Ol. Olivæ	Oj.

Vaginitis is due to injury of the vagina by foreign bodies, as by mischievous boys inserting fork-shafts, etc., during the period of œstrum, and by copulation with too large a bull. There is a flow of yellowish white slime, restlessness, whisking of the tail, swelling of the vulva, elevation of temperature, and constant attempts to micturate.

Treatment.—Mild astringent and antiseptic injections, such as zinci sulphatis ℥ss. in aq. Oj.

Distention of Uterus.—This is generally due to closure of the os preventing the escape of the menses.

Treatment.—Dilate the os, if possible, with the finger or a catheter, or by means of a trocar and cannula.

Whites, or **Leucorrhœa,** is a form of vaginitis mostly found in old cows.

Treatment. — Give nourishing food and use astringent lotions.

Inflammation of the Udder.—Mammitis, or 'garget,' is of frequent occurrence in the cow; it may result from external injury, exposure to cold, or irregular and bad milking. The lining membrane of the teat, the galactophorous sinuses, and of the acini of the racemose glands, which constitute the milk-secreting portions of the 'bag,' are all of the mucous variety, and, as with all mucous membranes, have communication with the outer air. This is an important anatomical fact to bear in mind, as there is good reason to believe that the majority of hard bags (*mastitis*, simple, acute, or chronic) are caused by the advent of septic germs from the outside. While the teat is being forcibly compressed and extended by the milker, the membrane at the orifice is sufficiently exposed to be infected by the milker's fingers or by contact with his dirty sleeve or bucket. While the animal is lying in filth, with the teat sphincters relaxed by recent milking, they offer sufficient attraction to septic germs. If any proof were wanting, a negative one is to be had in the greater success attendant on the antiseptic or disinfectant treatment of inflamed bags. The usual general treatment is described below, but we strongly recommend a warm injection of a 3 or 4 per cent. solution of chinosol, plus 5 to 7 per cent. of glycerin in water, in the manner advised for milk fever at p. 201. It should be done night and morning, or at least once a day. Hydrogen peroxide solution is also excellent, and is used in the same manner. The cowman may prefer to rub with the following embrocation :—

Lin. Camphoræ	℥iv.
Ol. Anchusæ	℥j.
Ol. Sesami	℥iv.

The addition of an essential oil (*e.g.*, eucalyptus) may be desirable among a certain class of clients. The symptoms are at first purely local, but are soon accompanied by fever in greater or less degree, depending upon the severity of pain, etc. The secretion of milk is diminished and perverted, being watery, and containing curds; it then becomes yellowish from admixture of pus, and may be entirely arrested. The gland swells, feels hard and hot, is very painful, the veins running from it being much distended. These symptoms may terminate in resolution, but in some few bad cases end in abscess, or even mortification of a quarter of the udder. The udder, it should be explained, consists of four quite distinct quarters or lobes; consequently milk can only be removed from each by its own respective teat. This division usually confines any disease to one quarter.

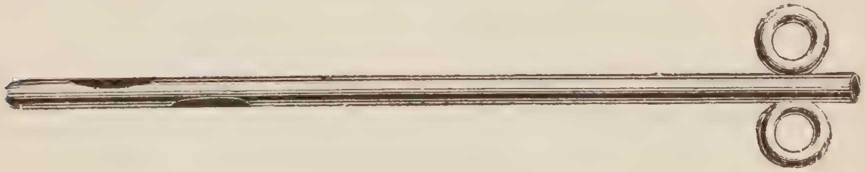

FIG. 36. MILK SYPHON.

The general treatment consists in lessening the food and giving a bold aperient, then antacids. Potass. bicarb. in two-drachm doses, twice a day, till the acute symptoms have passed, is generally satisfactory. Local treatment consists in the constant use of *warm* fomentation in the form of a linseed poultice, to which may be added ext. belladon. ʒiij., and the support of the gland by a carefully arranged bandage, through which the teats must be allowed to protrude. The milk must be frequently but gently drawn off. When the acute pain has passed off, resolution may be accelerated by gentle friction, and, still later, by a stimulating liniment or a mild iodine ointment. Should an abscess form, early incision must be resorted to; once being sure of the presence of matter, do not wait for it to 'point.'

The temperature recorded by veterinary surgeons in cows suffering from garget is higher than in any other febrile complaint, as much as 109° F. having been on several occasions noted by good authorities. It generally falls in a few hours. The thermometer is in this, as in many other diseases, a great aid to diagnosis; every prescriber should carry one. The natural temperature of the horse and cow is 102° F.

Garget is met with in all animals occasionally, but as affecting the cow it has received most attention for obvious reasons. Mares, bitches, sows, cats, etc., get chills and suffer as much; often with fatal results to the progeny. Many a valuable colt has been lost to the owner because the mare would not let it suck a sore udder.

Animals whose young are allowed to suck them are less subject to garget than cows whose calves are taken away immediately they are dropped. The rough brushing of the udder by the head of the young which everyone has noticed with lambs induces a flow of milk; while garget is most often met with in cows where bad milkers are employed or the udders are not properly stripped.

There is another kind of garget which old writers called the downfall in the udder, which was accompanied by swelling and pain of the joints of the hind limbs.

In some parts of the Continent garget occurs in a malignant and infectious form, especially among ewes.

The modern treatment of garget in cows with pot. bicarb., etc., has been already referred to, but many successful practitioners of the old school put their faith in bleeding and purging, and, if one may judge by results, they are not far wrong. As much as two and even three ounces of aloes with mag. sulph. is given in the following form :—

Aloes Socot.	℥iiss.
Pulv. Zingib.	℥j.
Bacc. Juniperi	ʒiv.
Mag. Sulph.	℔j.

M. ft. haust. To be given in 3 pints of small beer.

For local applications a pound of lard should be melted and rubbed into the bag, and followed by ung. althææ nocte maneque ; or, if this fail, the following liniment :—

Spt. Camph.	℥iij.
Liq. Plumb.	℥v.
Ol. Terebinth.	℥xij.
Aceti	Oij.

M. bene.

Once daily will be sufficient for this application until the skin shows a disposition to peel.

In cases of garget where a quarter drops out or mortifies, a dressing should be applied to the surface of the wound. For this purpose black oils may be used, or, better still, a carbolised oil of the proportion of 1 in 8 or 10.

For cracks or sores in cows' teats the following applications are recommended :—Tr. benzoin. co. after milking, or an ointment of 10 grains silver nitrate to 1 oz. lard.

Sore Teats, or **Chapped Teats**, in cows are often seen, especially in cold weather, after calving. The trouble is due to irritation of the cow and nervousness of the milker. The following application can be vouched for as a sure cure :—

Sulphurous acid, Glycerin	equal parts

Apply to the teats after milking.

Laminitis, or **Founder**, is seldom seen in cattle unless in dairy stock or those richly fed for immediate slaughter. There is extreme lameness and rapid breathing, due to derangement of the digestive organs, associated with indigestion and other internal derangements.

Treatment.—Remove the cause as far as possible; give a good purge, and poultice the feet with good poultices of bran and yeast; reduce fever with tr. aconiti and tr. opii.

A form of the disease, called 'potato founder,' occurs when too many potatoes are given, as in years of a plentiful crop and low prices. The tendo Achillis becomes detached from the point of the os calcaneum. For this there is no cure.

Foul of the Feet is a suppurative disease involving the sensitive and coronary substances. There is great lameness and agony, swelling of the coronets and suppuration between the digits, high fever, and loss of appetite. In highly bred animals it is due to a tubercular or scrofulous diathesis. The causes are toe too long, foreign bodies, etc.

Treatment.—Reduce the feet to normal size by poulticing, and use astringents. If there are granulations, apply the actual cautery, lunar caustic, nitric acid, etc., and give a cathartic and febrifuge medicine. A mixture of tincture of opium or tincture of aconite is of great power in reducing the pain and fever.

Swollen Testicles are caused by blows or by the animal lying without bedding. Great pain accompanies the trouble.

Treatment.—Put the testicles in a sling, and poultice with hops, extract of belladonna, etc.

Bull Burnt is a term applied to a form of gonorrhœa in the cow, and generally yields to simple treatment, though a malignant form of it is met with on the Continent.

A laxative dose in the form of 12 to 20 oz. of mag. sulph. should be given, and the vagina injected with a mild astringent, such as alum. ʒj. in aquæ ℥xl.; or Condy's fluid, 1 to 20; or carbolic acid 1 part, glycerin 3 parts, water 25 parts. The same remedies are, of course, suited for the bull. Extract of hamamelis is the most valued of recent introductions in veterinary pharmacy; 1 oz. of the distilled liquor with 3 oz. of boiled water injected into the sheath of the bull or vagina of the cow, by means of a syringe, being found most effectual.

Drying-off Cows.—When a cow is to be fatted, she should be first dried off, and this may be accomplished in a very short time with most cows, unless they suck themselves, or each other, when in company. To prevent this 'vice' a variety of instruments have been invented, and can be obtained through any of the wholesale houses. Dry food is a necessary condition, though some cowkeepers expect a drench to do everything, and will keep a cow at grass for convenience and economy if it happen to be summer time, and we must therefore accommodate ourselves, more or less, to the wishes of our employers, and let them pay for more medicine than would be necessary if these instructions as to dry food were carried out.

There are many ways of accomplishing the object in view, but none so good as the old one of giving bold doses of alum-rock. From four to eight ounces should be given as a dose, and the milk not all drawn at a time, while longer and longer intervals are allowed to elapse between the milkings. A good way of sending out a drench of this kind is to give a fine 'nose' as well as colour to it by the addition of bacc. juniperi ℥ss., coarsely powdered, with instructions to mix it with three pints of boiling water and give it to the cow when it cools to the temperature of new milk. If the cow is at pasture, or fed on green-meat, the dose should be given about three times in a fortnight, but a couple of doses will be sufficient if the cow is kept on dry food and 'short commons.'

Potass. bitart. is also used for the purpose, in doses of a pound by itself, or half that quantity with 4 oz. of alum coloured with bole.

The following is a good drying dose for a cow :—

Alum.	℥vj.
Resin.	℥ij.
Lini Farinæ,	
Pulv. Zingib. . . . āā.	q.s.
Aquæ	Oj.

Bathe the mammary gland with vinegar or rub with belladonna ointment, and do not milk too often.

Bronchitis.—Cattle are subject to bronchitis as a result of exposure, etc., and the treatment to be adopted is much the same as that recommended for the same complaint in horses (*see* p. 100). It is not rare for cows to be killed by getting drenches down the bronchi, especially when semi-insensible (*see* Milk Fever, or Parturient Apoplexy). Bronchitis may follow such accidents when death from suffocation does not take place. If the dose which has 'gone the wrong way' be a fluid, recovery is probable, but the cordial powders commonly given in gruel, ale, etc., are apt to prove fatal when any quantity has got into the bronchi.

In chronic bronchitis, often found in cows, the following gives temporary relief:—

Acid. Hydrocyan.	ʒij.	
Sodii Bicarb.	℥ij.	
Aquam ad	Oj.	M.

A wineglassful in boiled food morning and evening.

Rheumatism.—Rheumatic lameness has been already referred to (*see* p. 168), and the evanescent as well as metastatic character of the pain spoken of as evidence of its origin. Much light has been thrown upon rheumatism, gout, and uric-acid troubles since the first edition of this book. At that date some confusion existed in the minds of veterinarians as to the painful and swollen joints of calves, colts, pigs, and other animals, which had a similarity to rheumatic arthritis. It is now known that these 'joint ills' (as they are spoken of in the gross) are due to the entrance into the circulation of specific organisms, and not to the elimination of gout or deposition of substances from blood charged with waste products which the liver and kidneys have failed to excrete. Rheumatism attacks the fibrous tissue symmetrically. In the hind leg it affects the tendo Achillis: if both are affected the animal cannot stand. It also affects the joints, and in this form there is great danger of death from sympathetic fever. Colchicum and potassium iodide are a useful combination, and at times a blister to the parts has to be resorted to. We may supply our customers with such remedies as appear below, for they are of proved value, but we shall earn their gratitude more surely by impressing upon them the importance of carrying out those preventive measures advised at birth, and recommended at p. 199 *et seq.* and in the Board of Agriculture and Fisheries pamphlet.

As a direct bactericide, formalin (4 per cent.) has been successfully employed in the immediate neighbourhood of big joints, by means of the hypodermic syringe, but this operation must be entrusted only to those who have a knowledge of anatomy not to be expected of farmers in general.

A good drench for a cow suffering from rheumatism is as follows:—

Pulv. Guaiaci	℥j.
Pulv. Anisi	℥ij.
Pulv. Carui	℥ij.
Pulv. Gran. Parad.	℥ij.
Tinct. Opii	℥ss.

M. ft. haust.

Two-thirds of this quantity may be given to a horse, but drenches containing insoluble matters are not much to be desired for horses, on account of the greater danger of choking or 'going the wrong way.' A convenient method of treatment for horse or ox is that of alkaline bicarbonates, etc., in the drinking water, or with food previously damped, such as—

Potass. Nitrat. ℥ss., et Potass. Bicarb. ℥j., bis die ;

or

Sodii Salicylatis	ʒiij.–℥j.
Aquæ	℥iv.–℥viij.

Ft. haust. bis die.

Another good remedy is—

Potassii Iodidi	ʒij.
Aquæ	℥iv.

Ft. haust. semel die.

Hoose in Calves.—'Hoose,' or 'husk, is caused by a parasite in the smaller bronchi. The most effectual treatment is intertracheal injection of turpentine with carbolic acid and chloroform, or solution of iodine, viz. iodine 32 grains, potassium iodide 160 grains, water to 3 oz. Thirty minims of this with 45 minims of water is injected once daily for four days, then reduce the proportion of water until 5 or 6 drachms of the strong solution has been used. When injecting, the head of the calf must be held up, and a position halfway between the throat and breast of the calf chosen for insertion of the 'business' end of the syringe, which must go clean through the trachea into its lumen, and not merely into it or its lining membrane, for by such imperfect operation abscess subsequently forms, and some young animals have been killed by suffocation. It may be remarked here that the sensibility of the larynx and its lining membrane, which produces almost instant suffocation when anything goes the wrong way, is not shared by the windpipe, and even such powerful agents as carbolic acid in small quantities may be introduced into the lower air passages with but very little risk.

Either of the following is suitable for calves, and may also be employed for lambs if the dose is apportioned to their age and weight. About one-fourth that for a calf, at a rough reckoning, may form a base from which to calculate the dose for lambs.

Terebeni	ʒj.	Acid. Carbolic. . . .	♏xx.
Acid. Carbolic. . .	♏xx.	Chloroformi . . .	ʒss.
Chloroformi	♏xxx.	Ol. Olivæ	ʒij.

Treatment by inhalation is preferred by many, but serious accidents having occurred the method has somewhat fallen into disfavour. A perfectly safe and effectual method is the following:—Having secured the subjects in a shed, mix bran with hot water and put about a gallon into an ordinary nosebag with buckle and strap; then pour into the bran a sixth part of the inhalation, p. 220, stirring the bran, and affix the bag as for feeding. Add a fresh quantum for each calf until six have been done; then throw it away and begin again. About two minutes is sufficient for each animal, and it should be repeated in a week or ten days. A draught as below should be given to each calf.

For the Inhalation.

Acidi Carbolici	℥iv.
Ol. Terebinth.	℥j.
Glycerinum ad	℥vj.

M. ft. inhalatio.

Draught for Internal Use.

Tinct. Asafet.	ʒij.
Ol. Terebinth.	℥j.
Ol. Lini ad	℥iv.

M. ft. haust.

Foot and Mouth Disease.—Murrain, epizootic aphthæ, foot and mouth disease, by all of which terms this affection is known, is a contagious eruptive fever, seldom attacking the same animal a second time. Though only known in this country since 1840, it had caused great losses on the Continent of Europe in 1695, 1707, 1763, and later, and in the neighbourhood of Yarmouth, early in 1900, a cordon was established round the affected area, which soon extinguished the epidemic, the animals within the cordon being slaughtered.

Like the cattle-plague and lung disease, it is imported into this country, spreading by contagion, and never arising spontaneously; but, unlike them, it is communicable to man and other animals. Horses and sheep have been attacked from eating food contaminated by an affected cow, and pigs and children have frequently suffered by the milk.

Only a qualified veterinary surgeon can pronounce on the disease, and he will not prescribe for it. The owner's duty is to give notice to the police: he touches the button and the Board of Agriculture does the rest. Important as the disease is to the agriculturist, it is outside the operations of the veterinary counter prescriber. This also applies to **Pleuro-**

pneumonia, which has caused as much stumbling in the veterinary profession as the term has done among laymen. It is a specific contagious disease, and when proved to exist no treatment can be adopted, since the law demands slaughter of the animal affected as well as of those in immediate contact with it.

Lice.—At the end of the winter, colts, calves, and older stock are very apt to be crowded with these objectionable parasites ; they thrive best upon poor animals, finding a suitable home in the dirty matted hair in the late winter or early spring months, and on a sunny day may be seen literally in millions, every hair having nits upon it. One reason of so much rubbish accompanying them is that in the course of their development from the egg to the mature louse the skin is cast several times.

To get rid of them is not always easy, as the length of coat and accumulation of dandruff or scurf makes a waterproof covering which resists many substances which otherwise would kill when brought into contact with the parasites.

A sunny day should be chosen, and the early part of it, when a bountiful washing with soft soap and hot water should be undertaken, so as to clear the skin of grease and dirt before applying the remedy. Stavesacre is an effectual destroyer of lice if prepared by boiling ½ lb. of the seed with a gallon of water and brushing well into the coat with a hard brush.

Tobacco juice is also much in request for the purpose, and can be procured wholesale at a very low rate, as it is imported with only a nominal duty, and the old expensive plan of boiling or infusing good shag tobacco is not necessary. By the way, very few people avail themselves of the Excise privilege of growing sufficient tobacco for this and fumigating purposes, though they might easily do so.

Paraffin is sometimes used, but is a very dangerous remedy, being occasionally absorbed and causing the death of the animal, and not unfrequently raising a blister, with much unnecessary pain and subsequent blemish.

There is another kind of louse from which horses suffer, which, if once seen, can never be forgotten—we refer to poultry lousiness. It will sometimes happen that a horse stabled with fowls will become affected and literally tear himself to pieces unless promptly treated with one of the foregoing remedies, either of which is as effectual against this as against the ordinary louse.

It is always well to repeat the dressing and keep the animals moving about till dry, or they may lick off more lotion than is good for them, or stand about and get chilled.

Some farmers get rid of lice among horned stock by completely covering them with linseed oil. This is really a very scientific way of slaughtering the parasites, as it will be remembered that their breathing apparatus is placed alongside the abdomen, and oily matter blocking up the respiratory apparatus causes their death. It certainly takes a good deal of oil to soak a beast all over, but it is not all lost, as he licks himself and his companions, and there is nothing more fattening and improving to condition. Tobacco juice and water, equal parts, make a good cure; also—

Camphoræ	ʒij.
S.V.M.	Oj. M.

Apply with brush.

A good application, which a druggist might prepare, is Cofectant, diluted to 1 in 40, adding succi tabaci ℥ij. to the gallon. The following is also good :—

Acid. Carbolic.	℥iv.
Inf. Quassiæ ad	Cong. j.

A 4 per cent. soluble cresol solution answers well for horses and cattle. In the case of swine it is well to keep to the old decoction of stavesacre seed, boiling half a pound in a gallon of water for an hour and making up to the original measure when cold. This should be sent out with directions to dissolve 4 oz. of soft soap in a gallon of hot water, when the whole should be added to the lotion and applied warm.

If discredit is not to be brought on the medicament, instructions should be given to begin by dressing the face, ears, poll, mane, and tail, doing the body afterwards. To cut off the retreat of the enemy is most important, and this is just one of those little things that trip up the counter prescriber. He knows what will kill the vermin, and how to prepare it, but if he has never had any occasion to *apply* it he will not think how easy it is for a few married couples to escape into the ears and round the eyes and nostrils, coming forth, like Noah's company after the flood, to increase and multiply.

The dressing should be applied twice or three times at intervals of four or five days, and in addition some tonic such as the following may be given to improve the animal's general condition :—

Ferri Sulph.	ʒij.
Pulv. Gentianæ	ʒiv.
Pulv. Anisi	ʒiv.

M. ft. pulv.

One to be given night and morning in a quart of gruel.

Ringworm.—Young stock are much disfigured at the end of the winter by white patches of ringworm, and an effectual ointment finds a good sale in country districts. The following has been in use in one district for two centuries, and is reliable :—

Adipis	℔j.
Ol. Tereb.	℥iv.
Acid. Sulph.	℥j.
Sulph. Nig.	℥iv.

A Hertfordshire remedy which is said to require only one application is—

Pot. Bichrom.	℥j.
Aq.	℥v.

M. ft. pigmentum.

Inflammation of the Brain is occasionally met with as a result of blows or other external injuries, and may in some rare cases arise from tuberculous deposit. Cerebro-spinal meningitis is the form taken. If the condition is correctly diagnosed, early bleeding from the jugular vein is recommended, two or three quarts being a perfectly safe quantity to take from a cow. At the same time a full aperient dose should be given, such as—

Aloes Soc.	℥j.	
Mag. Sulph.	℥xij.	
Pulv. Zingib.	℥j.	M.

A seton inserted at the base of the skull between the ears greatly assists in the relief of cerebro-spinal meningitis ; so also does ice applied to the head by bandages of flannel attached to the horns, or to a head-stall if a polled beast. A low diet should be observed and gentle exercise as soon as practicable. If the condition arises from compression, and bleeding does not allay the delirium, it is better to call in the butcher, and not give medicine at all.

Inflammation of the Kidneys.—The symptoms of this are loss of appetite, quick full pulse, very scanty urine, back arched, hind legs brought forward under the belly, pain in the neighbourhood of the kidneys, suppression of milk.

Treatment consists in the administration of demulcent fluids, such as linseed tea, injection of warm water into the rectum at frequent intervals, a bran poultice over the loins, and

Tinct. Belladonnæ	ʒij.
Tinct. Chloroformi et Morphinæ	ʒj.–ʒiv.
Aquam ad	℥x.

M. ft. haust. Quartis horis.

Cold.—The animal eats little, and the ears and legs are cold ; is hide-bound and coat staring, soon followed by tears and mucous discharge from the nose. If the animal is benumbed, standing with its legs close together, give with a pint or more of hot beer—

Tr. Arnicæ	ʒij.
Spt. Camphoræ	ʒvj.
Pulv. Capsici	ʒj.

Cover the patient warmly for three hours, then rub down the whole body with a wisp of straw. Next day give a similar dose, and repeat the treatment on the third day. If purging ensues, discontinue the drink and give ½ oz. of nitre dissolved in water. A little meal and honey may be mixed with the drink. Cold is often succeeded by *catarrhal fever*, a fever accompanied by irritation of the Schneiderian membrane and lining membranes of the sinuses, extending to the horn cores.

Treatment.—Foment head and inject into nostrils warm water with a little carbolic acid and tincture of opium, and give tonics and stimulants internally.

Coughs in Cattle are of two kinds—dry and moist; they are not a disease, but are symptoms of disease, and are at times a valuable guide as to the part, degree, and stage of the disease from which they arise. A cough may be defined as a spasmodic involuntary action, preceded by a firm closure of the glottis, produced by a sudden and forcible expiration to remove some sort of irritant from some part of the respiratory tract. The varieties found are numerous, and as each has its own peculiarity they afford very important indications as to the nature and seat of the disease; therefore it is most essential and imperative to acquire a knowledge of them, and this can only be accomplished by careful observance and continual practice. Except for the cough peculiar to broken wind and that of roaring, the indications in cattle are much the same as, but less powerful than, those of the horse (*see* p. 99). The coughs of tuberculosis, hoose, and contagious pleuro-pneumonia in cattle have each its own peculiarity. The tuberculosis cough is a very pronounced and prolonged fit of coughing. The pleuro is short and single. In hoose the coughing is hacking and very distressing, with the head almost touching the ground. If cough is evidently accompanied with sore throat or tenderness on pressure of the ribs, and there is reason to suppose it is of recent origin, the following is an old and tried friend worth consideration:—1 part of black-currant jam and 2 parts of honey in 18 parts of water; give a pint of this night and morning. For chronic coughs liquid paraffin ʒij. to ℥j. in a bottleful of milk twice daily is a good remedy.

Cattle Itch is very infectious, and as soon as discovered in a herd the infected animals should be isolated, and the cowsheds and rubbing-posts sterilised with a 5 per cent. carbolic acid solution. Affected animals should be well fed and cared for, and 'salted' with a mixture of common salt 10 and sulphur 1. For external treatment the coal-tar antiseptics, such as cresol solution (2½ per cent. in water), may be used. A cheap and effective dip is—

Powdered Sulphur	2¼ lb.
Unslaked Lime	1⅗ lb.
Water	10 gals.

Slake the lime to form a thick paste, sift in the sulphur, and stir well; put this mixture into a kettle with 2½ to 3 gallons of water, and boil for thirty minutes at least, or two hours if practicable. The chocolate-looking mass being allowed to settle, the clear liquid is drawn off, and enough water added to make 10 gallons.

All dips are more effective if used warm—from 100° to 110° F. The animals should be kept in the dip until the scabs are thoroughly saturated. A second dipping about a fortnight after the first will kill any mites that may have hatched from the egg after the first dipping, but one dipping is usually sufficient.

Gloss Anthrax, or **Blane,** is a true anthracoid disease, localised on the tongue. The symptoms are similar to those of actinomycosis (p. 231).

Treatment.—Puncture the tongue, dress with carbolic oil, and give stimulants and ol. terebinth. internally.

Clyers, or **Cruels,** are the development of indolent and non-vascular tumours in the parotid and sub-maxillary region. They often suppurate, and are characterised by a copious discharge from the mouth and nose, often accompanied with blood. There is no known remedy.

Tuberculosis, or **Consumption,** is caused by a specific bacillus, and man and all the domesticated animals, including birds, are subject to it. It is infectious as between individuals of the same species, and some species are more prone to it than others. When Koch first isolated the bacillus, a great wave of excitement passed over the world, as it was thought that immunisation as well as cure might be effected by the inoculation with his vaccine, which was heralded as a cure. After much controversy, Royal Commission and other work, it is agreed that *tuberculin* (a preparation made from the nutrient broth in which tubercle bacilli have been grown) is valuable as a diagnostic agent, and in some cases as a curative agent.

As a diagnostic of tuberculosis in cattle the injection of Old Tuberculin into healthy animals produces no reaction, while in tubercular beasts there is a rise after injection. Consequently the test has become of international importance, and is thus performed :—

> The temperature of the animal is to be taken rectally six hours before and immediately prior to the inoculation. If it exceed 103° F. the test is not to be applied. The injection is performed under the skin of the neck, best in the evening, and the temperature is to be taken in twelve, fifteen, eighteen, and twenty-four hours subsequently. A rise of temperature of at least 1·8° F. is held to be a positive reaction and strongly to indicate tuberculosis. In the event of a doubtful reaction the inoculation may be repeated after a few weeks. The cattle diagnostic is prepared in three strengths—(*a*) for calves under six months ; (*b*) for cows ; (*c*) for oxen.—'Extra Pharmacopœia.'

It is important to note that after a dose of tuberculin in cattle, a further dose during six months may fail to produce again a rise in temperature.

Tuberculosis shows many forms. It may be generalised, or confined to a particular organ, or at least appear to the ordinary observer to be so restricted, but minute examination of the glands will generally result in the detection of some small nodules containing the specific bacillus. Pulmonary consumption occurs in some two-thirds of all the cattle, dogs, and cats affected. Tubercles in the mesenteric glands, in the spleen, and in the liver are the commonest form in horses, pigs, and poultry. Tubercular arthritis is said to be more common in man than in other animals, but there are a great many bullocks seen with it affecting the hocks, fetlocks, and foot joints.

Treatment.—As doctors of animals we may often congratulate ourselves that we are not obliged to attend patients doomed to a lingering death. The law permits of cattle being dressed for human food if the tuberculous portions are not offered for sale, and provided the carcase bears the usual indications of wholesome meat. It will pay the owner to butcher, even in the case of a cow, as it is proved that the milk carries the disease. Clients should be advised to fat off or sell as best they may, if the beast will not put on flesh. Although the extremists insist that tuberculosis *must* be caused by infection, the observations of many men lend acceptance to the theory of hereditary transmission ; indeed, the former now go so far as to admit a predisposition or greater liability to infection on the part of animals (or men) the offspring of tuberculous parents. No treatment will cure consumption, but a beast put up to fat may derive some assistance from tonics, such as iron, gentian, and cod-liver oil.

Pericarditis is a disease which more frequently affects the cow than the stable-fed bullock. It may be due to lung disease, but is principally brought about by the carelessness of the milkers dropping hairpins, etc., which the animal swallows, and through the suction and activity of the lungs they are drawn through the walls of the first stomach and penetrate the pericardium. The symptoms are indigestion, capricious appetite, and perhaps diarrhœa, followed by feeble and irregular pulse, jugular vein distended, and an accumulation of fluid or watery swelling from the maxillary space down to the chest ; and a gurgling sound of the waters or effusion may be heard.

Treatment.—Heart tonics, sulphate of iron, and potassium iodide. In obstinate cases tapping is resorted to.

Pneumonia is the most ordinary non-contagious disease of cattle. It is often confounded with contagious pleuro-pneumonia, but it has no period of incubation, it comes on sporadically or quickly, and has a tendency to recover. It is generally associated with pleurisy. It is distinguished from the contagious form by the variations of temperature, and usually a large part or whole lung is involved, while in the contagious form only small patches are affected, usually in different places. The symptoms are: skin hot and dry, shivering of shoulders, horns and ears hot, stoppage of milk, temperature 104° to 105° F. At first a friction sound is heard, followed by crepitations.

Treatment.—Keep out of draughts, foment with hot blankets or mustard, give a saline purge, and stimulants such as carbonate of ammonium in ʒj. to ʒiij. doses.

Milk—Bitter.—Generally due to the food, such as turnips or herbs when the cow is out at grass. Remove the cause and treat as for stringy milk.

Milk—Bloody.—Usually due to weakness of the blood-vessels of the udder. Give tr. ferri perchlor. ℥ij. Two doses are generally sufficient.

Milk—Blue.—Caused by atmospheric influences, such as impure air, and by eating decomposed food, such as turnips, heated grass, etc. Give a purge and treat as for watery milk.

Milk, Dropping of.—Incontinence on the part of the cow is a very unprofitable disease to the owner, as it is rarely cured; especially is this the case when one teat only is affected. It is due to disease or weakness of the sphincter muscle through intrinsic or extrinsic causes. Assistance can be given by painting the teat around the external orifice with collodion or a mixture of alum and albumen, either of which usually closes the orifice, but it has to be opened or broken every time of milking by the teat syphon or milk catheter. A well-fitting indiarubber ring put on the teat, and not too tight, is beneficial, and has prevented the loss of large quantities of milk when all other remedies have failed. It may also be necessary to milk the cow oftener than usual, especially the weak teat. If treatment fails an effort should be made to get the cow to suckle one or two calves, and thus prevent the continuous escape and waste of good milk.

Milk — Stringy. — Caused by faulty feeding, by a form of catarrh in the udder, or by the cow eating 'butter-wort' when on the grass. Remove the cause if practicable and give sodii hyposulphit. ℥j.–℥ij. several times daily.

Milk—Strong-smelling.—The result of indigestion. Give a good brisk purge, and follow with sodii hyposulphis as above.

Milk, Suppression of, often accompanies indigestion. It should ensure a full examination and investigation, as it may arise from many serious as well as temporary and trifling causes. It is always of importance from a monetary point of view, and a falling off of milk which lasts more than a few days is seldom overtaken. If traceable to indigestion, the trouble is best treated by a change of food and three doses of cordial aperient as follows, allowing an interval of forty-eight hours between the doses :—

Potass. Nit.	℥ij.
Pulv. Anisi	℥j.
Pulv. Carui	℥j.
Pulv. Capsici	ʒj.
Mag. Sulph.	℥x.

To be given in two or three pints of good ale at blood-heat.

Cow-keepers should be advised to keep the cordial drenches recommended on pp. 193–4.

Milk—Unusable.—Many people regard the cow and its milk as the propagators of nearly all diseases, and one is often asked whether milk from cows suffering from certain ailments can be safely used. Milk from animals infected by any of the following diseases should certainly not be employed: Cow-pox, foot-and-mouth disease, tuberculosis, actinomycosis, garget, metritis, diarrhœa and dysentery, pyæmia and septicæmia, milk fever, paralysis, rabies (very rare), red-water, liver-diseases, swollen and hard udders, and anthrax. In the last case there are usually no symptoms, and it is only after death that the disease is recognised. The milk should not be used either in any case of elevation of temperature until the cause is ascertained, after abortion, or when the cow has been repeatedly dosed with pungent medicines.

Milk—Watery.—If not due to tuberculosis, this results from too moist or watery food. Change the food to a dry and strength-producing one. Give boiled barley, and a few pints of stout or gruel daily, with mineral tonics, such as ferri et cupri sulph.

Tapeworm.—A great variety of tæniæ, or tapeworms, infest the domesticated animals. There are long and narrow, short and wide, very large and very small tapeworms, the last often doing the most mischief among horses and cattle, unobserved by persons in charge. Dogs and cats are largely infested. Something like 30 per cent. of dogs in Britain are the hosts of tapeworm, and many seaside cats derive them from the viscera of fish. No matter to what variety they belong, tapeworms have all a similar cycle of life—the egg, the cyst, and the mature worm or colony of zooids. (*See* Gid in Sheep, p. 252.)

Treatment.—Areca nut, turpentine, sulphate of iron, and extract of male fern are the chief substances employed for their destruction or expulsion (*see* Worms in Dogs at p. 299).

Thrush in Calves shows itself in whitish sores on the tongue or gums of sucking calves, and the patient refuses to suck. It is an aphthous disease similar to the thrush of infants, and may be treated with mel boracis or a lotion of boracic acid and glycerin.

Blindness.—A white scum on the eyes of cattle is often caused by chaff or some other foreign body remaining in the eye for a lengthened time. It can be removed by applying a solution of argent. nit. gr. x. in aquæ ℥j. In the bush epidemics of white scum occur, and the following lotion is sold for it:—

Acid. Boric.	ʒij.
Zinci Sulphat.	ʒj.
Tr. Opii	ʒvj.
Aquam ad	℥xxiv.

To be syringed into the eye.

Wooden Tongue, or **Actinomycosis.**—A malady produced by the ray-fungus (*actinomycis*), which is characterised by a hardened condition of the tongue, leading to suppuration or ulceration not only of the tongue, but of the mouth or other parts of the body. The disease is most malignant, and is communicable to man. Thus a person dressing an animal's actinomycotic sores may get actinomycosis of the skin, or if any of the 'matter' gets into the mouth or nose the fungus may extend in a few months to the lungs (in which case the life of the individual may be measured at ten months from the time of infection, although if detected early an autogenous vaccine may effect a cure). In cattle the treatment is to give half-ounce doses of potass. iodid. with 12 grains of red iodide of mercury in cold water, daily for fourteen days. The veterinary surgeon should be called in to advise, for the virulence of the disease when communicated to man and its horrid nature call for its prompt suppression in animals. Another disease resembling actinomycosis is *Botryomycosis*. It affects the udder, and is found also after castration, being mistaken for scirrhous cord. The treatment is the same as for actinomycosis, a similar solution of the iodides also being applied to the affected parts, before or after incision.

DISEASES OF SHEEP

SHEEP in disease may be treated like cattle, reducing the doses of the remedies to one-fourth.

Red eyelids are always a sign of health in a sheep; when they are white or blackish, the animal is ill.

The specific diseases of sheep are comparatively few, but the animals are peculiarly subject to contagious disorders which, owing to their gregarious instincts, are very difficult to check or cure. Moreover, where the flocks are at all extensive, it is almost out of the question to expect that attention to be given to each individual which is devoted to horses and cattle. The shepherd naturally tries to cure a flock by some general treatment, such as salt, or ferri sulph. in the food, dipping or smearing for scab or ticks, lime for the feet, etc.

Dentition in Sheep

Cut	Incisors	Molars
At birth . . .	4, 6, or 8	12
,, 3 months . .	—	4th permanent
,, 9 ,, . .	—	5th ,,
,, 1 year 3 months .	Central pair permanent	—
,, 1 ,, 6 ,, .	—	1, 2, 3, and 6 permanent
,, 1 ,, 9 ,, .	2nd pair permanent	—
,, 2 ,, 6 ,, .	3rd ,, ,,	—
,, 3 ,, 6 ,, .	4th ,, ,,	—

Arranged as in ox; no upper incisors.

Blood Diseases.—Sheep are liable to two contrary blood dangers, partly due to constitutional tendency, and partly the effect of unsuitable diet. In fattening sheep there is a risk of 'plethora,' from which condition apoplexy and liver-diseases may ensue, while pasture on bleak lands, food soaked in moisture, excessive suckling of ewes, and shearing are all circumstances which are likely to bring about an anæmic and sometimes a dropsical condition. Plethora is manifested by symptoms simulating apoplexy. The animal separates itself from the herd, looks dazed and giddy.

The symptoms of anæmia are debility, coldness, and pallor of the visible membranes, and sometimes a dropsical condition under the jaw, described by shepherds as 'poke' or 'chocker.' A variation of diet in each case is obviously the most essential form of treatment. Plethoric sheep will be much benefited by having salt mixed in their food; in fact, this is a specific. Anæmic flocks should be removed to low-lying, well-protected pastures; salt and ferri sulph. should be given, and the food should be as dry as possible.

Anthrax is not uncommon in sheep. It has been confused with apoplexy, and is sometimes misnamed plethora, or a plethoric condition is spoken of as a predisposing cause. Anthrax usually affects the head or neck and fore-quarters of sheep, but it is analogous with quarter-ill in cattle, and in both cases is due to a specific bacillus. Vast numbers of sheep are annually inoculated on the Continent by the disciples of Pasteur, who claim to have saved many millions in different districts of Europe. The British Islands have at no time been so subject to anthrax as France and the southern half of Europe. It is believed by our most advanced veterinarians that the bacillus might be finally destroyed if all affected carcases were completely incinerated. Burial, no matter how deep, with or without lime, as prescribed by law, fails to destroy the spores, which are conveyed by earth-worms to great distances and for an almost unlimited time.

Louping-ill and **Braxy.**—These two diseases are bracketed together because they belong to a group of specific bacterial diseases. Louping ill, or 'trembling,' is confined to the British Isles, and is very prevalent in the West and South of Scotland and the North of England. Braxy, or 'sickness,' occurs in Cornwall, the South-West of Scotland, the West Highlands, the West Coast of Ireland, and other countries, but the East Coast of Great Britain is almost exempt. It appears to prevail where the Gulf-stream impinges on the littoral of the country. From this disease alone nearly a million sheep die annually in Great Britain, and in louping-ill the mortality is from 20 to 50 per cent. of the sheep attacked; but the excessive mortality is averted by moving the animals to healthy ground. Professor Hamilton, of Aberdeen, who has made a special study of these diseases, states that they are due to an organism which is found in the peritoneal fluid, but the bacillus of braxy is quite distinct from that of louping-ill. Both bacilli form spores, which may be on the pasture for years without losing their vitality, thus aiding in the perpetuation of their respective diseases. When the diseases are thoroughly established remedial measures are of little avail. The course of braxy is so rapid that opportunity is seldom afforded for remedial agents, the first intimation often being the dead body of the animal. The symptoms are described as a short, quick step, followed by unsteady gait, and a tendency to lie down and get up suddenly. There are two forms of louping-ill, chronic and acute. In the former the sheep is usually convulsed at first and afterwards more or less paralysed, and ultimate recovery is rare. In acute cases the disease runs its course to a fatal issue in a few hours, with symptoms of blood poisoning.*

Treatment.—Efforts for the amelioration of these scourges must be preventive. Professor Hamilton has succeeded in preparing a serum which makes sheep immune when administered by the mouth at the proper season. This treatment was carried out with louping-ill in the spring of 1906 in the worst districts of Scotland, when 1,340 first-year sheep were treated and there was not a single death among them. The latest experiments with braxy began in August of the same year in Scotland, Ireland, and England, in this case the effort being made to produce multiple immunisation at one operation—for braxy, louping-ill, malignant œdema, and two allied diseases; the five distinct bacilli of these being found in the peritoneal cavity of affected sheep. A drench of the immunised serum from the five was administered, and in Scotland and Ireland the experiments were wonderfully successful, and the mortality from all causes did not come up to more than 2½ to 3 per cent., though the mortality in Scotland among undrenched sheep in the same districts as those in which the experiments were conducted was enormous. The experiments failed on the Duke of Northumberland's property in the North of England, but it is thought that the mortality was really due to black-quarter, the bacillus of which was not one of the five used in making the serum.

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* Dr. J. P. McGowan has recently (1915) found that *Bacillus bipolaris septicus ovium* is the primary cause of braxy, the main secondary cause being that the animal gorges itself with rank, succulent, easily-eaten grass covered with hoar frost, which reduces its vitality by a severe internal chill at the same time that the external atmosphere remains cold.—*Highland and Agricultural Society's Transactions*, 1915.

These diseases occur at particular times of the year, with such regularity that the date of their appearance can be foretold almost to a day. Braxy prevails in the summer and winter months, and louping-ill in the spring.

A Departmental Committee of the Board of Agriculture reported on this subject (*Chemist and Druggist*, 1907, II, 341), and their conclusions are the same as Professor Hamilton's. The Committee make the suggestion that facilities be given for the universal drenching of sheep against louping-ill and braxy, where these diseases prevail, by means of immunised serum.

Grub in the Head (Bots).—In May, June, and July the sheep is subject to the attack of a species of gadfly, known as the sheep-bot (*Œstrus ovis*). The fly is twice the size of the common house-fly, and may be seen on walls or fences in the neighbourhood of flocks. It is a dull brownish fly, with large yellow head, two greenish eyes, and wings almost enveloping the body. The female instinctively seeks to deposit its ova on the margin of the nostril of the sheep, and the attack of the fly for that purpose causes agitation and even terror in the animal. Flocks will pack together, all with their heads down towards the ground, while the outer ones thrust their heads between their forelegs. If actually attacked, they throw themselves on the ground or run from the flock at a gallop. The eggs are hatched in a few days, and the young larvæ crawl into the nostrils and sinuses by means of hooks, irritating the membrane, causing a gleety flow of bloody mucus, and occasioning a peculiar twisting of the head as if in pain, and often an unaccountable loss of condition. Sneezing, a choking sort of cough, loss of appetite, diarrhœa, and sometimes death, are consequences of the attack of this parasite. No treatment has been found more effectual than holding the sheep's nose over a vessel containing a mixture of burning tar and sulphur, so that the fumes shall be inhaled, or putting the animal into a chamber with chlorine gas or sulphurous-acid gas. Steaming the head with vapour containing eucalyptus oil is beneficial, the oil being also given internally. Carbolic oil and turpentine may be injected up the nostrils. The attack of the fly may be to some extent prevented by smearing the sheep's nostrils with tar, fish oil, or other non-poisonous fly dressing.

Husk (also called Lamb Disease).—A worm generally described as *Strongylus filaria* is often found in the bronchial tubes of lambs and sheep, causing a form of bronchitis, similar to husk or hoose in calves (*see* p. 218), and a similar or the same worm is also likely to infest the alimentary canal, occasioning diarrhœa and dysentery. These parasites may encyst themselves in the lungs, causing a false tuberculosis. They are probably taken into the stomach from pastures where they have been left by previous generations. How they find their way to the lungs has been the subject of much learned discussion. The parasite often does not cause much inconvenience to the adult animal, but in lambs it may occasion a most irritating, constant coughing, an asthmatic kind of breathing, pallor of the tongue, anæmia, wasting, dysentery, and death. Where the disease has broken out, the lambs actually affected should be brought into sheds or strawyards and those not yet attacked should be taken to new dry pastures. Doses of 1 oz. to 2 oz. of salt and 6 oz. to 8 oz. of lime-water may be given to each lamb daily. The following draught may be administered every three days :—

Ol. Terebinth.	ʒij.
Ol. Lini	℥ij.
Tinct. Asafetid.	ʒj.
Ol. Caryoph.	gtt. v. M.

Give in linseed gruel or beer. The following draught is also good :—

Ol. Terebinth.	ʒiv.
Pulv. Nucis Arec.	ʒj.
Ext. Filicis Liq.	♏xxx.
Ol. Lini	℥iij. M.

Give at one dose, and repeat every second or third day.

Fumigation with tar, sulphur, or tobacco is a useful adjunct, and the daily injection of about 10 minims of chloroform into the trachea is frequently of great service.

Husk is often treated by veterinarians of the modern school by intertracheal injections of terebene and hyd. bichlor., while mineral tonics, as ferri sulph. in 5 or 10 grain doses in combination with common salt, are administered ; a little pulv. fœnugræc. and gentian make the medicament more palatable —an important consideration if a large flock is to be treated by giving it in the food, and not as drenches.

In Australia sheep suffer from worms both in the stomach and in the lungs (husk or lungworm). In the adult sheep, worms in the stomach occasion diarrhœa and dysentery, and fatal results frequently ensue. Scouring in young stock, caused by worms, may be treated with advantage by administration of common salt. In lambs lungworm is especially fatal. Many sheep-dip manufacturers prepare a specific, with results good and indifferent. The second formula given above is worth pushing.

Thrush, known as *Aphtha simplex* and *Stomatitis* (also called 'evil') is an ulcerous eruption on the tongue, often affecting lambs, and sometimes, but rarely, attacking sheep. The saliva, which is blood-stained, trickles from the mouth, and there is generally more or less fever and loss of appetite.

Examination of the tongue shows crops of vesicles, which die away in a few days. The treatment in lambs is to change the mother's diet; give the lambs sodii hyposulph. ʒj. to ʒij. daily in the food, and older animals Epsom salt and potassium nitrate. There is another disease, called *Aphtha maligna*, which may at first be confounded with this, but which is much more serious. In this the eruption occurs on the lips, the nostrils, and the membrane opposite the gums. It is derived from a scabby sore which has broken out on the udders of the ewe, and is accompanied with fever in both the adult and the young animal. The same treatment as already indicated for thrush may be adopted, but the lambs must be taken from the dams and fed artificially. Lime-water may be given if diarrhœa be present. The sores on the ewes should be touched with nitrate of silver and then treated with a solution of alum.

Lambing.—The lambing season is of all others the most important with the flockmaster, and he is liable to all the troubles of the cowkeeper, plus the greater difficulty of affording manual aid to animals so much smaller in cases of difficult parturition. Although shepherds may not be counted among the most enlightened persons who visit the pharmacy, there is at least one subject upon which they can 'give us points and a beating.' They are practical accoucheurs. Shepherding is commonly hereditary, very few farm hands ever taking to it. The little boy is made use of by his father to find a doubled-up leg, where the larger hand of the parent cannot gain admission, and so it comes about that the art of the accoucheur is learned at a very receptive age, and never forgotten. The loss of something like three per cent. of ewes in a flock is not regarded as serious, and it is only when an unusual number of deaths occur that professional advice is sought. The shepherd's proficiency in one department naturally enhances his own opinion of himself, and he has 'receipts' for all sorts of incompatibles.

In lambing greater cleanliness should be present than now exists. The accoucheur usually has to fill his pipe several times per hour, his hands are thrust into his pockets times without number, 'clean and unclean.' The cord-like tool or twitch which he uses has to serve as long as the cord will permit; and what with tobacco, dirty pockets, unclean hands and clothes, and a septic cord, how can the passage and uterus of a ewe resist the direct and continuous insertion of germs of infection into the tender and often inflamed part? An antiseptic lotion should be near at hand for the attendant to cleanse and rinse his hands thoroughly before he undertakes a case, and by doing so a general decrease in the mortality of ewes after lambing will result.

In ewes, as in cows, the womb sometimes comes out, and has to be replaced and retained by stitches or an instrument, such as West's clamp, shown below. When accomplished, the animal should be kept short of bulky food, and the bowels kept soft by oleaginous aperients and bran slops.

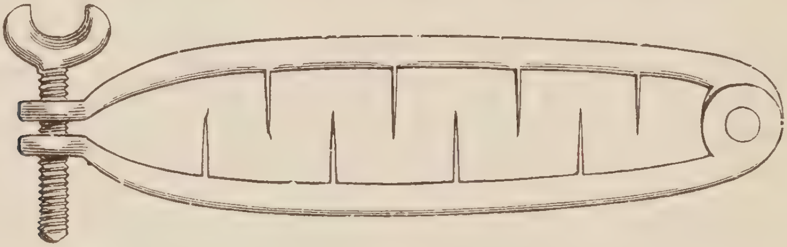

Fig. 37.
WEST'S WOMB-CLAMP (HUISH & CO.).

Ewes will often lamb well, and their progeny will frolic about, in dry hard frost, and no casualties occur from castrating at two and three weeks old; but in wet cold weather it is generally better to postpone castration, even if the lambs are rather bigger than they should be. For straining in ewes it has been the custom for generations to supply oleum viride, but a great improvement on this is 1 drachm of carbolic acid to 6 oz. of oil, whether 'viride' or 'rubrum.' An oil coloured with alkanet and made odorous with a few drops of origanum, may be made a profitable, and, what is more, a most effectual proprietary article, as the antiseptic properties of carbolic acid are in this form best obtained, and a much larger percentage of ewes are saved where it is used.

Scab in Sheep.—This disease, which is of a contagious nature, is due to the presence of minute insects called 'acari.' The cure, therefore, depends upon killing these parasites.

An acarus is about the size of a pin-point, and when examined under the microscope is found to have an oval-shaped body and four pairs of legs. Its presence on a sheep is proof positive of the existence of scab. Detection of the parasites is arrived at by gently scraping a little scurf off an affected part, and examining it under a microscope with a half-inch power.

The acari, on reaching the skin of a sheep, burrow into the skin, and there bury themselves for a time. There the females produce their eggs, and in about sixteen days reappear with their litters of about a dozen young ones. These young ones again burrow, multiply, and reappear; so that in a short time an animal becomes infested with myriads.

The symptoms of scab are in accordance with the movements of the acari. When the insects enter the skin, minute red spots are left. Shortly, little pimples appear, which change in colour and size till a pustule is formed, and this bursts at the time the young brood is ready to appear on the surface. Of course intolerable itching accompanies all this, and the rubbing and scratching of the animal only aggravates the pustules, destroys the wool, and makes sores, which, drying, form the scabs from which the name is derived.

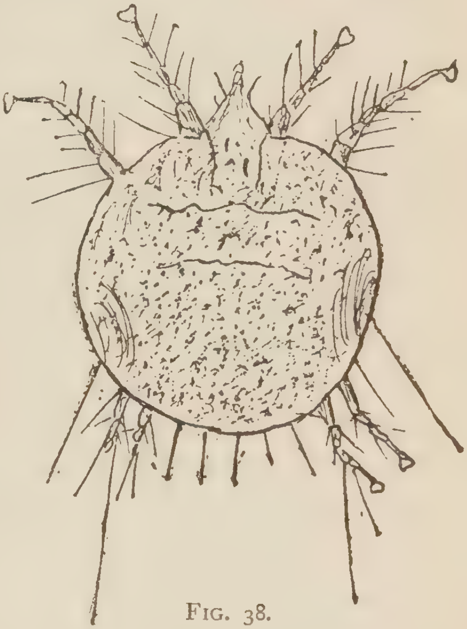

FIG. 38.

THE SHEEP-SCAB (ACARUS).
(Magnified).

It is important to remember that acari may exist for some weeks on loose portions of wool, or on hurdles and trees against which a sheep has rubbed itself, and may then induce disease in any healthy animal coming in contact with them. In treating the disease it is not only necessary to kill the parasites on the sheep, but also to give a second dressing about sixteen days after the first, for the benefit of those which were beneath the skin on the first occasion.

Scab or scabies, writes a 'vet.,' is due to any species of the sarcoptic, dermatodectic, or symbobiotic families. The dermatodectic is most common in this country: it is very contagious. The animal has an intolerable itch, to allay which all attempts are fruitless. It soon takes on a wearied and emaciated appearance, wool falls out in tufts, leaving white patches, and if skin be examined pimples of a yellowish and crimson colour will be observed. Without the means of microscopical examination of the scab, a very true and sure diagnostic symptom is that when the parts affected are rubbed the animal seems to evince pleasure and satisfaction by the continual smacking of the lips. As the propagating powers of the parasite are rapid (it being calculated that from one to two millions can be hatched within a period of three months—that is, from one female only at the beginning down to six or seven generations), treatment should be immediately resorted to. The parts most commonly affected are the shoulder, neck, and back. Local treatment consists of ung. sulph., ol. picis, tobacco, or crude carbolic acid.

Prevention.—Examine every sheep individually, isolate the unhealthy and dip the healthy, gather the wool from all poles, palings, dykes, fences, hedges, etc., and limewash everything that can be got at with quicklime containing one pint of crude carbolic acid to a pailful of wash.

Numerous substances are capable of destroying acari, and some of them may also destroy the sheep. Mercurial ointment is used very largely for smearing sheep, and washes containing corrosive sublimate have also been used. Both preparations are dangerous, and should not be employed. Arsenic is very largely used as a sheep dip, but it, too, is objectionable as poisonous. Not that there is any chance of a sheep being poisoned by absorption of poison through the skin. It is probable that no substance in watery solution can be absorbed by a sound skin. Ointments, however, applied by rubbing, as mercurial ointment, are most undoubtedly dangerous. The following is a good arsenical bath for fifty sheep :—

Arsenic	20 oz.
Soda Ash, 50 per cent. . .	18 ,,
Soft Soap	60 ,,

Add to this five gallons of hot water, and then forty-five gallons of cold. In this dip, the proportions are such as to leave a small excess of alkali. Among non-poisonous dips, sulphur is undoubtedly a valuable parasiticide, and may be used simply as an ointment or in combination. Tobacco is a very efficacious and convenient application. It must not, however, be boiled, as the heat drives off valuable volatile principles. It must be prepared by infusion. The following form will not disappoint :—

Tobacco	1 lb.
Sulphur	1 lb.
Size	1 lb.
Water	5 gals.

The sulphur, of course, is merely suspended, and the dip requires frequent stirring when in use. The object of the size is to make the dip slightly sticky, and thus allow the fleece the better to retain some of the sulphur.

As the result of experiments in the Orange Free State, where, as in other parts of South Africa, scab is one of the worst pests the farmer has to contend with, the Government of that State recommend the use of caustic soda and sulphur made up as follows : Sublimed sulphur 20 lb. is mixed to a cream with water, and caustic soda 5 lb. stirred into it slowly ; in half an hour add the balance of 100 gals. of water. The solution must not be boiled, and it is recommended that not more than this quantity be prepared at one mixing. The advantage claimed for this dip over the lime and sulphur one is that the soda has a softening action upon the skin, which enables the solution to penetrate and kill the parasite, whereas the effect of lime is to harden the skin.

Prevention should be carried out by keeping healthy sheep away from diseased ones, and from all places on which acari may be left, such as railway trucks, hurdles, etc.

Instead of treating the scab by one application, some authorities advise the use of a preliminary dip of alkaline water to soften the scabs, or of oil or glycerin well rubbed in for the same purpose. This is to be followed in two or three days by a poisonous dip. Nearly all advise that the scabs be rubbed with a stiff brush while the sheep is being dipped.

The quantity of dip required for each sheep is variously estimated at from one quart to one gallon. For small numbers of sheep, say 50 to 100, the larger amount is necessary ; while for large flocks, one quart for shorn, or two quarts for unshorn sheep may be allowed. The dip should be kept while in use at a temperature of from 100° to 110° F. The addition of tar to dips serves a good purpose, as it is not only healing, but drives away flies.

The following are formulæ for some popular dips used for scab :—

Texas Tobacco Dip.

Tobacco	30 lb.
Sulphur	7 lb.
Concentrated Lye	3 lb.
Water	100 gals.

Steep the tobacco in three successive portions of water, expressing each time ; then add the other ingredients to the liquor, and stir well while in use.

Law's Sheep-dip.

Tobacco	16 lb.
Oil of Tar	3 pints
Soda Ash	20 lb.
Soft Soap	4 lb.
Water	50 gals.

Steep the tobacco as in the previous formula, and add the other ingredients to the liquor.

Zundel's Carbolic Dip.

Crude Carbolic Acid	3 lb.
Caustic Lime	2 lb.
Potash	6 lb.
Soft Soap	6 lb.
Water	70 gals.

Mix and boil.

Dr. Kaiser's Carbolic Dip.

Tobacco	13½ lb.
Soda	8 lb.
Freshly Slaked Lime	4 lb.
Soft Soap	8 lb.
Crude Carbolic Acid (50 per cent.)	4 lb.
Water	66 gals.

Infuse the tobacco in the water, strain, and to the infusion add the remaining ingredients.

The following formulæ are from a work on the 'Animal Parasites of Sheep,' by Dr. Cooper Curtice, issued by the United States Agricultural Department :

Carbolic Acid Dip.

Soap	1 lb.
Crude Carbolic Acid	1 pint
Water	50 gals.

Dissolve the soap in a gallon or more of boiling water, add the acid, and stir thoroughly.

Keep the mixture well thinned, and do not let it get into the mouth, nostrils, or eyes of the sheep. Hold each sheep in the bath not less than half a minute.

Kerosene Emulsion Dip.

Fresh Skimmed Milk	1 gal.
Kerosene	2 gals.

Churn together till emulsified, or mix and put into the mixture a force-pump, and direct the stream from the pump back into the mixture. The emulsification will take place more rapidly if the milk be added while boiling hot. Use 1 gallon of this emulsion to each 10 gallons of water required.

Kerosene Soap Dip.

Soap	1 lb.
Water	1 gal.
Kerosene	2 gals.

Bring the water to a boil and dissolve the soap in it ; then add the kerosene, and churn until emulsified. Use 1 gallon of this emulsion to 8 of water.

These are used generally after shearing.

For particulars of the Sheep-scab Order (1905) *see* page 417. From this it will be noticed that dipping with an approved preparation is compulsory in the United Kingdom.

Other Parasites.—Besides acari, sheep are liable to the attacks of so-called ticks (*Melophagus ovinus*), also known as keds and fags, and of sheep lice (*Trichodectes sphærocephalus*) and 'the fly' (*Musca vomitoria*). The tick is a dark red insect, with a white belly, with six clawed legs, and is sometimes nearly as large as a bean. Ticks are generally found on the neck and shoulders of ewes in spring, with their heads partly buried in the skin. They are very irritating, and if they pass, as they will, to the lambs, they often cause so much irritation as seriously to check their growth. If they are found on the lambs these must be dipped to get rid of them, but it is better to remove them from the ewes, either by dipping before shearing or by nipping them in two with the thumb and finger nails one by one, and lightly touching the skin around with a little mercurial ointment or turpentine.

Lice more often infest the inner part of the thighs and arms and the sides of the neck. Sheep will be noticed to bite at their flanks, to rub themselves and break the wool, and to scratch their elbows with the hind feet. Mercurial ointment is frequently used to kill the lice, and it does so effectually, but it is dangerous to apply it, especially in cold and wet weather. Tobacco-water with hellebore, or sulphurated oil, is almost if not quite as effectual, and is safer.

Fly, or **Fly-Struck.**—Maggots from the deposited ova of the bluebottle fly are found generally around the root of the tail or any raw wound. A sure sign of fly-struck is that the animal keeps apart from its fellows. In the early summer 'fly' is a great nuisance. As the maggots hatch from the eggs they burrow into the skin of the animal and cause great irritation and sore places. The attacks of fly can be prevented by sprinkling a few drops of fish-oil on the sheep's wool early in May, and fish-oil applied freely after the animal has been attacked will get rid of the pest, but will also reduce the value of the wool by giving it an unpleasant smell which cannot afterwards be got rid of. Shepherds generally apply 'stone mercury' (corrosive sublimate) to the place where the fly has struck, and this is effectual but damages the skin. Spirit of tar applied freely, and cutting away the wool in the neighbourhood of the spots attacked, will destroy the maggots and keep away the fly. The following is a common but dangerous application :—

Tobacco Water	10 gals.
Arsenic	℥iv.
Soft Soap	℥viij.
Asafetida	℥j.
White Lead	℥iv.
Pearlash	℥iv.
Sulphur	℥vj.
Cinnabar	℥ij.

Mix.

The following is a good powder for preventing the fly striking, and has been in use for several generations where fly is troublesome :—

Plumbi Oxid. Rub.	℔ss.
Plumbi Alb.	℔iss.
Pulv. Umber. Ang.	℔ij.
Flor. Sulph.	℔ij.
Pulv. Veratri Alb.	℔ij.
Ol. Animalis	℥ij.
Ol. Picis	℥ij.

Misce.

The oils are rubbed down with a small quantity of flor sulph. at first and more added until the bulk is not damp. The powder should be passed through a sieve before sending out in 1 lb. packets labelled as follows :—

FLY POWDER FOR SHEEP.

POISON.

Directions for Use.—It should be applied when the dew is on the sheep, or otherwise moisten the fleece with a garden water-pot and rose. Part the wool down the back and elsewhere if necessary and apply the powder by means of a flour dredger. The hand should be held over the sheep's eyes while the head is well sprinkled, as fly will strike where any sores are caused by fighting.

This packet is enough for TWENTY SHEEP.

Rot in Sheep (Flukes).—To the non-agricultural mind this expression is not in the least explanatory, and the amateur may confuse it with another disease affecting the feet. Liver rot or fluke is a very serious disease, arising from the presence of a parasite (*Distoma hepaticum*) in the liver of the sheep. The parasites are called flukes, and occupy the bile-ducts so fully as to block the current of bile both by their bodily presence and their excrementitious matter, which is of a granular nature, especially calculated to fill up these small but important channels. Small numbers of these undesirable guests may be entertained without any serious inconvenience to the 'host,' and very few Welsh sheep are found to be entirely free from them when slaughtered. Rot is a disease of young sheep in general. Other animals may be infected, but very rarely, and in them rot is seldom detected.

In wet seasons and upon low ground (always excepting salt marshes) rot may be most dreaded, the reason being that flukes pass through several stages of development in the small molluscs that can themselves only subsist in moist places. It is only in exceptional seasons that flukes are of any account on the South Downs or the chalk hills of Surrey, but the Fens are never free from them. They are seldom seen along the salty grounds abounding on the sea shore or on dry hilly grounds. When they occupy the liver in large numbers their presence interferes with the portal circulation, and dropsy is the result. During the first six weeks when sheep are attacked with fluke or the rot, the animals will decidedly improve in flesh by the stimulation of the liver, and wise flockmasters take advantage of this to kill them before the muscular fibres become flabby, or, in other words, the flesh becomes unfit for food. If allowed to go on, the sheep rapidly loses flesh, becomes 'razor-backed' and 'pot-bellied,' like a rabbit fed entirely on green-meat, the wool comes out in handfuls, and the wretched creature wastes to a skeleton. If a lamb is born it is covered with a whitish watery slime instead of a yellowish one.

To kill a parasite in such a secure retreat is obviously impossible, as it cannot be got at through the stomach, and any remedy intended to act through the circulation must be strong enough to kill the sheep. In making this remark we are aware that many persons with more zeal than anatomical knowledge believe they can kill flukes by the administration of ol. terebinth., sodii chlorid., chickweed tea, nettle tea, and other remedies, but they are deceived by the fact that sheep improve in the early stage without remedies at all, and fatten more rapidly if given cordials, but only during that period.

There is good reason to suppose that sheep having but a few flukes practically recover when turned on salt marshes: sufficiently, that is to say, to be made moderately fat and saleable for food, but the 'cure' is not lasting, and a flock of ewes would be no use saved for another year when once really infected. *Post-mortem* appearances are serosity in the areolar tissue and abdominal cavity; flesh soft, white, and unfit for dietetic use; and liver soft and light in colour, bile duct thickened, with calcareous deposits in it.

Treatment is of no avail.

Prevention.—Remove healthy animals from wet pasture and give salt and iron. Place pieces of rock salt at various parts of the pasture or in feeding boxes, where the animals can get to lick it.

Sheep-pox.—Sheep are subject to an eruptive disease having just the same characters as cow-pox, and, according to Professor Simonds (formerly Principal of the Royal Veterinary College), not communicable to the cow or to man. There is, too, in sheep a malignant form of pox in which vesicles are not produced, but in which the victims lose their wool in matted lumps, their eyes undergo rapid changes terminating in blindness, their nostrils are stopped up with a horrible matter, and their skins crack like clay in a hot sun. In scientific nomenclature sheep-pox is divided into

(1) A malignant or confluent form;

(2) A benign or discrete form.

The history of this disease is a little obscure, but it is thought to have existed in England many centuries ago, and to have disappeared, to be reintroduced in 1847 by some merino sheep brought from Denmark. The disease was traced to Russia, where cattle plague and pleuro-pneumonia are commonly believed to be permanently located. Professor Simonds was sent out by our Government to investigate this 'Eastern question,' and, in his lectures at the Royal Veterinary College, used to say that we might look forward with reasonable certainty to cattle-plague travelling westwards again, whenever a great European war should render the movement of large herds necessary, and the existing strict rules on the western frontiers become relaxed. The same remarks doubtless apply to sheep-pox if it be true that it has a permanent home in Southern Russia.

Variola ovina is seldom if ever seen in this country. The incubative stage covers from ten to thirteen days: a case usually lasts from twenty-six to twenty-nine days. The following may be given as its course :—

First ten to thirteen days, period of Incubation
Next three ,, ,, Papulation
,, three ,, ,, Vesication
,, three ,, ,, Pustulation
,, seven ,, ,, Desquamation

Giddiness is rarely curable, and as the flesh is harmless it is best to kill the animal at once. (*See* Gid, etc., p. 252; Tapeworm, p. 231; and Worms in Dogs, p. 299.)

Garget.—Inflammation of the udder is more frequent with the ewe than with the cow. When it is so painful that the mother refuses the lamb, the udder should be poulticed with hops or carefully fomented with warm water, and the following ointment may be applied :—

Camphor.	ʒj.	
Ung. Hydrarg.	ʒj.	
Ung. Viridis	℥j.	M.

In cases where the udder continues to swell, incision must be had recourse to, and a lotion of chlorinated lime (ʒij. to ℥vj.) applied. When the putrid smell has gone, the wound may be healed with tinct. benzoin. co. Lin. camph. is an excellent application. The lamb must not suck an udder so treated.

Swollen Udder.—Rub together the white of an egg, some saffron, and olive oil, and rub the udder with this thrice daily. Milk the animal as long as the disease lasts, and give internally twice daily, to remove the hardened milk, 1 drachm of a mixture of potassium sulphate 4 parts and nitre 1 part. Give one draught containing 1 drachm of nitre and 2 drachms of common salt dissolved in water (*see also* p. 211).

Consumption, or **Tuberculosis,** is not so frequent a disease among sheep as it is with cattle. The greater time spent in the open air is thought to account for the comparative immunity of sheep, but there is probably some other factor, of which we are not yet able to take account (*see* p. 226).

Coughs.—Sheep are often observed to have a husking or soft cough, and it is a frequent source of loss to the flock-master, by retarding the fattening process and keeping the animals below par. Common catarrh accounts for some of the cases, and where only a few sheep are affected, and the nasal mucus is similar to that of other animals with colds, a few *Cordial Powders* may help to restore them. The following is an old friend :—

Pulv. Fœniculi	℥ij.
Pulv. Elecampan.	℥ij.
Flor. Sulphuris	℥ij. M.

Give two teaspoonfuls twice daily in food. If the cough results from dusty food, see that the cause is removed. If this fails, the following mixture may be given night and morning in wet food, as bran-mash or moistened cake-dust, or upon chaff and kibbled corn :—

Tr. Chlorof. et Morph. (sine Ol. Menth. Pip.)	♏xx.
Liq. Ammon. Acet.	ʒj.
Syr. Scillæ	ʒj.

Ft. dosis.

Lambs in autumn, and sometimes in spring, are badly affected with worms in the bronchial tubes (*Filaria bronchialis*), and this gives rise to Husk (*see* p. 237).

Cuts.—At shearing time phenyl is better than tar for the cuts caused by careless shearers. Tar mats the wool, and phenyl, with an equal quantity of water, is just as efficient for preventing the attacks of flies, etc.

Diarrhœa is most common in young sheep and lambs, and is due *inter alia* to indigestible food, bad water, parasites, and liver disease. There is a sour, bloody discharge, accompanied by violent straining, while in lambs there is no inclination to suck, and they are uneasy, show intense thirst, grind the teeth, and tuck up their bodies.

Treatment.—Remove lambs to a dry and warm shelter; give a teaspoonful of castor oil, repeating if necessary, and feed with linseed tea or gruel containing a little brandy. Older animals should get a tablespoonful of castor oil; change the diet, and give the following *Diarrhœa Mixture* :—

Pulv. Catechu	ʒiv.
Pulv. Zingiberis	ʒiv.
Pulv. Opii	ʒj.
Cretæ Præparatæ	℥iss.
Bismuthi Subnit.	ʒiv.
Aq. Menth. Pip.	℥x. M.

Dose: two tablespoonfuls twice daily.

Black Scour, or **Skit,** is due to the presence of the *Strongylus contortus* in the intestines. The fæces are of a dark green colour and extraordinarily bad smelling. Give a mild aperient, following this with a mixture of 2 drachms of chlorodyne and 1 drachm each of catechu, gentian, and ginger.

Gid, Sturdy, Turnsick.—The condition known under these names is occasioned by a species of hydatid (*Cœnurus cerebralis*). This is the median stage of a tapeworm of the dog (*Tænia Cœnurus*), which, in order to complete its development, uses the sheep as its intermediary host. It has the appearance of a small bladder filled with pellucid water, and establishes itself in the brain or between its two hemispheres. As it grows it presses on the brain and causes the sheep to hold its head always on one side, and as it grazes to rotate always towards that side. The brain is affected, and the animal is always frightened at any movement. The symptoms are lameness, blindness, delirium, turning suddenly round, and walking to one side. If the head is examined a softness of the bone may be found at the base of the horn.

Treatment.—Trephine the head at soft part and draw off the cyst with a syringe. Close up the wound and keep off flies, etc. In general a number of embryos are present, but only one develops at a time; thus second cysts may form, and so on. The cyst should on no account be left lying about, but should be burned. It is a recognised fact that in a case of sturdy the sheep always turns in a direction opposite to the side of the brain affected. In view of the danger to dogs, the excrements of the diseased sheep should be destroyed. None of the heads of sheep containing the cyst should be given to dogs. Sheep-dogs should be purged two or three times a year.

Hoven in sheep is of similar origin to the same disease in cattle. Give the following draught every four hours:—

Pulv. Zingiberis	ʒij.	
Pulv. Gentianæ	ʒij.	
Sodii Hyposulphit.	ʒiij.	
Spt. Ammon. Aromat.	ʒij.	
Aquæ	℥iij.	M.

A dose of magn. sulph. or ol. ricini should be given after a day. Great care as to diet has to be exercised, and excess of succulent matter avoided.

Red-water, or the effusion of a bloody fluid in the abdominal cavity (*sanguineous ascites*), is a frequent and often fatal disease among sheep. It is generally the result of the removal to a cold damp pasture, and happens when hoar frost occurs. The administration of sulphur as an aperient in doses of 1 oz. daily (½ oz. for lambs), salt in the food, iron oxide, and a complete change of diet and surroundings, are essential.

Foot-rot is one of the most common ailments of sheep which the druggist is asked to treat. It is a growth between the interdigital space and the toe. It may be occasioned by damp and dirty pastures, or by dry, sandy, and gritty ground. Foot-rot is very common among sheep, especially on some soils, and indeed is never absent from some flocks in the wet seasons. It does not appear to be infectious as between one sheep and another, though it should be stated here that professional opinion is divided on this point, and exhaustive experiments have been carried out with a view to elucidate the matter. It would seem that *land* carries it.

The symptoms are lameness and local inflammation; the hoof separates from the coronet, and large ulcerating sores appear, and in these cases much harm may be done by the unsparing use of the shepherd's knife. The fore feet are generally the first attacked, and the animal affected will in this case graze on its knees, and lie about. The foot is hot and tender, the coronet swollen, the horn becomes soft and apparently rotten, pieces of it becoming detached. Where the sensitive structures of the foot become exposed, fungous growths occur, which ulcerate, bleed, and discharge a thin, very foul-smelling matter. The disease is most prominent in the early autumn, and particularly after a wet summer.

Treatment.—First clean the hoofs, paring away all loose and detached horn with the proper instruments. Moisten loam with vinegar, put it into a bag, stick the foot into the mass and tie it up. Repeat this several times daily, cleaning out the matter from the edge of the cleft in the hoof, and cutting away all diseased horn. Make a solution of alum ½ oz., green vitriol ½ oz., in ½ pint of water; dip tow in this and place it in the wound, covering it with dry tow. When it is thought necessary to give special care to valuable animals, poulticing is adopted. Daily dressings of butter of antimony, or of an ointment containing pulv. cupri sulph. ℥j., pulv. hydrarg. perchlor. ʒij., adipis ℥vj., should be applied. Formulæ for other foot-rot dressings are given on p. 60. Perhaps the most convenient method of treating foot-rot, as it is also one of the best, is that based on the experiments initiated in 1904 by the Board of Agriculture. This consists of a foot-bath of solution of copper sulphate, which is not only a curative but a preventive. The bath is made of a solution of 1 lb. of sulphate of copper in a gallon of water, and in stubborn cases the sheep should be made to walk through the bath as often as once a week. The directions may be summarised as follows :—

1. A bath of wood or concrete, 16 feet long and 8 inches wide, sides sloping out, ends 3 inches deep, provided with cross pieces or grooves to prevent slipping, side fences close boarded and to slope out so as to admit of sheep walking easily through.

2. Solution to consist of 1 lb. copper sulphate in 1 gallon of water, or, if prevention only is aimed at, half this strength will suffice. Time to be allowed for thorough solution.

3. Copper sulphate to be bought under a guarantee of purity (98 per cent.), and if possible to be powdered, not in large crystals.

4. Sheep if badly affected to have hoofs pared before the animals are put through the bath.

5. A day when the grass and soil are dry to be selected.

6. Copper sulphate and most of the substances used being poisonous, a cover for the bath, to prevent stock drinking the solution, may be an advantage. In any case, the bath must be well fenced in.

7. If ewes with lambs at foot are treated, they should be put through very quietly, so as to prevent the solution getting on to the teats and thus into the mouths of the lambs.

8. Sheep with long wool should also be put through very quietly, or otherwise the solution may, in certain circumstances, discolour the wool.

Foot-and-Mouth Disease.—A highly contagious and infectious febrile disease, characterised by vesicular eruption in the mouth and around the coronets and interdigital spaces. It is distinguished from foot-rot by the eruption in the mouth and around the coronets. There is also elevation of temperature, lameness on more than one foot, with separation of the hoof from the coronet, and the hoof perfectly sound. At the posterior part of the interdigital space there is redness of the skin with a number of vesicles, which generally burst; if not, they dry up and the hoof sloughs off. All ruminants and the pig, dog, and man are susceptible to this disease: it is seen as an eruption in the mouths of infants after drinking the milk of affected animals.

Treatment.—Mild astringents and cleanliness, with solution of potas. chlor., alum, or sod. hyposulph. gargles. For the feet walk-through washes as above described.

Abortion frequently occurs in herds. Its causes are excitement when heavy in lamb, such as over-driving, dressing feet, crushing in pens, railway trucks, etc., bad food, and ergotised grass. Symptoms, when seen, are isolation from the rest of the flock, and discharge of a gluey and slimy fluid and the immature fœtus.

Treatment.—First and principal, disinfect as for cattle; wash uterus, prevent from cold; give laxatives and tr. opii ʒij. or chlorodyne ʒj. if required; if practicable, isolate. Animals that have aborted should not again be used for lambing.

Catarrh is often seen after long exposure in cold and wet weather. There is a peculiar cough, with discharge from the nostrils, loss of appetite, dulness and swimming of the eyes, the animal seems to be pained at times, and during a paroxysm of coughing it appears to be partially insensible.

Treatment.—Remove to drier and warmer quarters, give nourishing food with a little cod-liver oil, boiled linseed, etc., and if fever be present, spt. æth. nit. and liq. ammon. acet. in a little whisky is advisable.

Cracked, Chapped, or Sore Teats.—Found generally in wet and frosty weather, and when the ewe is deficient in milk, as then the lamb has to suckle oftener to get its satisfaction than when the ewe has its usual quantity. If the sores are neglected inflammation of the udder usually results. Dress them with equal parts of olive oil and glycerin, and keep the ewes in a sheltered place during cold or wet weather.

Paralysis.—This is loss of nervous power, and is often seen after lambing, and in some cases before; due to excessive exposure to cold and inclement weather.

Treatment.—Warmth and comfortable quarters; after lambing, injections of ol. carbol. into uterus, mild cathartics, boiled linseed or gruel, and Easton's syrup and whisky internally.

Jaundice, or **Yellows,** is quite a common disease in sheep—in fact, if one were taking particular notice of the mucous membranes, more so of eye, one would be horrified to observe the large number showing a yellowish tint, and by going to the slaughter-houses and examining the livers one would find a very large percentage affected. Sheep fed on rich pasture or rich food, to force them on, are mostly attacked. All the symptoms of jaundice are exhibited as in cattle. The treatment is to reduce the food, and give an entire change of pasture from rich or strong to weaker, a dose of salts or aloes and calomel if the case requires it, and a liberal supply of salt.

Orchitis (Swollen Testicles).—Seen often in rams, due to blows from others' horns, jumping walls, and exertion, the last most commonly. There is the usual swelling, with the bag very painful to touch, difficulty in passing urine, colicky pains, and lying down.

Treatment.—Poultice, lin. belladonnæ externally, and give nervous sedatives (*e.g.*, pot. brom. ʒij.-ʒiv.) to lower sexual excitement.

Joint-ill in lambs is due either to wet and cold weather, to the soil, or to mismanagement at and after birth. The symptoms resemble those of rheumatism, with the formation of slight swellings, which are soon seen to be fully developed abscesses. These burst, leaving the joint quite open. In such cases it is not worth attempting a cure unless the animal is specially bred, but in milder forms rub the parts with an embrocation, bandage, and give tonics in good nourishing gruel. Good shelter and dry food are preventives.

Constipation often affects lambs two or three days old, due to retention of the meconium or, more frequently, to the deficiency of the mother's milk. The condition of the mother must first be improved by aperient medicine and suitable food. In treating the lamb insert the finger into the rectum and give mild laxative enemas at intervals. Also give oil internally, with or without stimulants, until improvement sets in ; then for a few days spt. ætheris nitrosi should be administered in mucilage or gruel.

Dropsy.—A very serious disease, caused principally by feeding with decomposed roots, especially turnips, but also due to prolonged exposure to cold or wet. The symptoms are the same as those of liver-rot or fluke, the two diseases often being mistaken for each other.

Treatment.—Give ferri sulphas in doses of ʒss. to ʒj., along with linseed tea, milk, and eggs. Treatment, is, however, expensive unless the animal is valuable, in which case tinct. ferri perchlor. ʒj. to ʒij. thrice daily should be given, and when an improvement is seen give the following draught twice daily :—

Ammon. Carb.	ʒj.	
Spt. Æther. Nit.	ʒij.	
Tinct. Camph. Co.	ʒij.	
Tinct. Gent. Co.	ʒij.	
Aquæ	℥iij.	M.

Tapeworm.—The life-history of this pest is discussed on pp. 299-302. Diarrhœa and debility are two of the premonitory symptoms when sheep are attacked. The tapeworms of the sheep differ from those of the dog in the absence of hooks on the head, and their cystic stage and where they live not being known. Several forms infest the sheep, but the most commonly found is *Tænia expansa*—a very appropriate term, as it often measures more than 20 yards in length. The segments are short, thin, and very broad, transparent, etc., and contain two genital pores on the margin ; they are expelled in great numbers and grow very rapidly. Symptoms are similar to those seen in all other worm-affected animals—viz., intense and voracious appetite, loss of condition, hard and brittle skin when the wool is turned up, paleness of eyes and visible mucous membranes, followed by diarrhœa and death. The worms may be seen being expelled and lying on the pastures, but not on all occasions.

Treatment.—Give any one of the following daily for a few days in the doses mentioned :—(1) Kousso, ʒij. in oil after a night's fasting. (2) Pulv. arecæ, ʒj. (3) Antim. tart., gr. xx.-xxx. (4) Hydrarg. subchlor., gr. xx.-xxx., cum sodii chloridi, q.s. Then follow with a draught of ol. tereb., ʒj.-ʒiv., and ol. lini ad ℥iv. For prevention, remove all stock, if possible, to fresh pastures, scatter quicklime or plough down the affected pastures, keep off all stray dogs, and gather and burn all worms found.

Calculi.—Stones are formed in the urinary channel and kidneys as the result of prolonged forced feeding on rich nitrogenous foods, such as beans, peas, corn, maize, etc. The symptoms are loss of appetite, colicky pains, and constant and frequent straining ; while the urine becomes acid from the formation of uric and silicic acids. In the tup small calculi may be seen hanging from the wool of the sheath.

Treatment.—Remove any calculi found in the urinary tract and dress with an antiseptic liniment. Hydrochloric acid may be given internally, and a little belladonna will often relieve the intense pain, otherwise—the knife.

Woolballs in lambs are due to the animal taking in the wool while feeding, and it agglomerates in the stomach, causing loss of appetite, dulness, giddiness, excitement, difficulty of movement, and death. Prevention is better than cure, and this means that wool must not be allowed to lie about on the pasture. There is no certain medicinal cure. Oil, anodynes, dilute nitromuriatic acid, and enemas may be given, but they are of little avail if the ball be of a fair size. For an article on the symptoms, prevention, and treatment, see *The Chemist and Druggist*, 1913, I., 399.

AILMENTS OF GOATS

Goats are healthy animals, but are at times seized with disease or ailments which require a little careful nursing and attention as in other animals.

Common Cold, or **Coryza.**—This is at times a very troublesome disease, marked by a harsh and painful cough, discharge from the nostrils, watery and staring eyes, and general depression and languidness. The treatment consists in washing out the nostrils with diluted Jeyes' fluid or lysol and giving stimulants and expectorants internally. Keep the animal in dry and comfortable quarters, and in a warm and even temperature.

Foot-troubles are more common than one would conjecture. An animal used to moderate exercise and fairly soft grazings will, after long exercise and grazing on bare wintry pastures, exhibit signs of disease of the feet. As a rule the horn is worn through, and there is more or less bleeding and even suppuration, with the bone of the foot showing. The treatment is to remove all diseased and superfluous horn, poultice, and wash with Cofectant or similar preparation (1 in 40) or mild astringents. Occasionally, when the animal is housed for a time, the toes grow too long, and it is necessary to dress them to their usual size, otherwise disease and malformation results. When practicable, the feet should be examined at least once a week.

Lice.—Goats are subject to lice, which at times prove very troublesome and annoying to the animal through the excessive irritation and scratching which is caused. A dressing of any of the insect-powders or parasiticide lotions usually employed generally suffices. If not, the animal should be immersed in a tub or barrel containing sheep-dip, taking care to keep the head well out.

Worms.—Both intestinal and lung worms are often found in the goat. A simple and effectual cure is ol. terebinthinæ ʒiij. and ol. ricini ℥j., to be followed with a few vermifuge powders.

DISEASES OF PIGS

Constipation.—Some pigs are naturally active and require constant attention. An enema should be given if the case is urgent, otherwise ℥j. to ℥iij. of Glauber's salt, followed by small and repeated doses of jalap and calomel.

Convulsions.—Young pigs are subject to these, just as are young children. Give every four hours a draught of pot. brom. and chloral hydrat. āā gr. x.-xx. (according to age) in aq. dest. ℥ss.

Cough.—Slight coughs are cured by feeding with sour milk. For cough resulting from chill, make an electuary of aniseed 1½ oz., liquorice 1½ oz., honey 4 oz.; a piece the size of a walnut to be mixed with a little sharps or other favourite food night and morning.

Dentition of Pig

Cut	Incisors	Molars
At birth . .	Eight	—
At 1 month .	Central pair temporary	1, 2, and 3 temporary
,, 2 ,, .	2nd ,, ,,	—
,, 5 ,, .	—	4th and 7th permanent
,, 8 ,, .	3rd pair permanent	—
,, 9 ,, .	Tusks permanent	—
,, 11 ,, .	—	5th permanent
,, 12 ,, .	Central pair permanent	—
,, 1 year 1 month	—	1, 2, and 3 permanent
,, 1 ,, 5 ,,	—	6th permanent
,, 1 ,, 6 ,,	2nd pair permanent	—

Diarrhœa resulting from cold.—Give 1 oz. of juniper berries once, or ¼ oz. of tormentilla root twice a day. Allow no milk. Diarrhœa, or scouring, in sucking pigs may be treated by giving the sow a few old beans. 'Calves' Cordial is the best medicine after a dose of castor oil (*see* Formulæ). Parasites are a frequent cause of diarrhœa in pigs of all ages. The evacuation should be carefully examined and suitable anthelmintics prescribed.

Dropsy of the belly is often due to poverty, and subjects recover with improved diet. In a few instances it is due to some interference with the portal circulation, or the blocking up of the bile ducts with parasites or their excreta. Flukes, which cause the 'rot' in sheep, may affect pigs, but with much more serious effect than in sheep at the earlier stages. A dropsical state in young pigs arises often from the food being very sloppy—nearly all water, in fact—and devoid of sufficient nutritive material for growth and development. In old sows it may be due to the frequent bearing of farrows of pigs and poor food while suckling them. *See* Worms.

Ear, Maggots in the.—If a pig has a sore place anywhere that he cannot conveniently get at, flies are apt to blow it and produce maggots. The ear is one of those situations, and the tail is popularly supposed to be another, or we should never have had those interesting lines handed down to us respecting the farmer's dinner party, whereat

> One talked of mildew, one of frost, and one of storms of hail,
> And one of pigs that he had lost with maggots in the tail.
> One wiped his nose upon his sleeve, one spat upon the floor,
> And, not to give offence or grieve, held up the cloth before.

Maggots occurring anywhere may be easily disposed of by a carbolised oil dressing, and customers should be advised to apply it twice. One in 20 of ol. rubrum is a perfectly safe application.

Eye Diseases.—Pigs are not very much troubled with maladies in connection with the visual organs, and this is only consistent with the popular idea that they can 'see the wind.' Second sight of this kind should enable them to avoid a draughty corner in the stye. A glassy or mucous accumulation occasionally affects growing porkers, and this should be treated with a boric lotion. The edges of the lower lids may be anointed with vaseline or any simple ointment to prevent accumulation of sticky matter.

Fattening Pigs.—Experiments conducted among pigs in Essex and by the U.S.A. Bureau of Agriculture prove the great value of cod-liver oil for making flesh rapidly and bacon of good quality. Twenty pigs separated from a lot of three hundred, averaging in weight from five to fifteen stone, received two ounces of oil daily with as much meal as they pleased. The rest of the lot were treated in exactly the same manner, but got no oil. Those receiving the oil are stated to have consumed less food, and when killed weighed the heaviest and made the most money in the London market, the fat being firm and white. When the daily allowance of oil was increased to four ounces per day the fat became yellow, and the flesh acquired a fishy taste. For small pigs an ounce daily was found the most economical quantity. It should be specially recommended for bad thrivers, and after any debilitating illness, as also for those pigs fed largely on maize. The latter cereal is found in this country to produce fat which dissolves out in frying, and leaves but a shadow of the matutinal rasher to represent the plump one put in the pan. Both cod-liver oil and linseed oil materially aid the fatting process without this objection, which, strange to say, does not apply in America or in the colder parts of Russia. Only a small proportion of maize, whole or ground, can be profitably employed and here again the druggist should make use of his opportunities of pushing the oils. Needless to say a winchester or two of the oil which has gone a bit off colour does well enough for pigs. Cod-liver oil is also recommended for cattle. Sugar has great feeding properties also, as seen in the feeding of pigs with sugar-cane on board vessels returning from Jamaica and other sugar-producing countries.

Gripes, or **Colic.**—Pigs are liable to colic as a result of unsuitable food. It is not difficult to diagnose, as they double themselves up and behave very much like human beings in this respect (as well as in others).

Treatment.– A dose of castor oil with a few minims of ol. menthæ pip. If relief is not thus obtained, a dose of Calves' Cordial' containing tinct. chloroformi et morphinæ should be given.

Hide-cracks is an affection to which the pig is liable during sunny weather. The skin becomes hard, reddened, and cracked from the animal basking in the sunlight, or it may be due to inattention to cleanliness. Diminution in weight and deterioration in value of the pig follow upon the intense irritation. The run of the stye should be covered with sacking or bracken during the hot weather, and the skin well washed with buttermilk. The following usually proves effective after a few applications when a little is rubbed daily into the affected parts :—

Ac. Hydrocyan. Dil.	ʒj.
Potass. Carb.	ʒj.
Ol. Olivæ	℥x.
Aquæ	℥x.

Epsom salt, mixed with the food or drinking-water, keeps the bowels in order and reduces the fever.

Leg Ailments.—Young pigs, up to six months old, often go wrong on the legs. From the knees downwards the legs swell, especially the front ones. This is commonly called *cramp*, but it is really rheumatic gout. Very little can be done medicinally, and animals so affected are generally slaughtered owing to the rapid loss of flesh, but if treatment is specially desired, follow the instructions under Rheumatism.

Loss of Tail.—High-bred pigs, when young, are very apt to lose their tails through disease, which shows itself as a red spot that gradually spreads all round the root of the tail, destroying the cuticle. If once round there is little chance of saving the tail ; but if at the first all the red place be well scraped with the nail or a penknife until it bleeds, and afterwards greased, a scab will form, a cicatrix follow, and the tail will be saved.

Lungs, Inflammation of.—The prominent symptoms are loss of appetite, incessant and distressing cough, and heaving at the flanks. Keep the animal warm, dry, and away from draughts. Mild aperients are advisable—*e.g.*, 2 to 4 drachms each of sulphur and Epsom salt, according to the strength of the animal. Follow with a powder of digitalis 2 grains, antimonial powder 6 grains, nitre 30 grains, twice daily. A stimulant should be given while this treatment is proceeding if the animal looks weak, such as—

Spt. Ammon. Aromat.	ʒj.
Spt. Æther. Nit.	ʒij.
Æther. Methylat.	ʒij.
Aq. Menth. Pip. ad	℥j. M.

To be given in milk or gruel twice daily.

Parturient Fever is sometimes met with in sows, and the same treatment as in the case of cows may be adopted; but it is very difficult to treat sows, as they are proverbially obstinate, and drenching them is a serious business. Many pigs will eat food in which mag. sulph. has been dissolved, and flor. sulph. added to wash is not usually rejected. When it becomes necessary to give a nauseous drench, there is no better plan than the old method of cutting off the toe of a stout boot and introducing that end of it into the sow's mouth while pouring the drench in at the other end. A piece of hose can be similarly used, a funnel being inserted at the free end.

Quinsy, Strangles, or **Gloss-anthrax.**—One of the most malignant of the diseases of swine. A specific germ is the chief cause, and the disease is commonest in spring and autumn. There is a loss of appetite, the ears hang, the nostrils secrete mucus, the head is shaken, the mouth is dry and hot, the ears cold, the eyes watery; ultimately the throat swells, the tongue becomes red and then brown, the voice lower. Give daily in whey 1 drachm saltpetre and $\frac{1}{4}$ oz. Glauber's salt. If the pig will not, or cannot, swallow, mix 4 oz. Glauber's salt and 2 oz. nitre with enough honey to make an electuary, and rub ½ oz. on the tongue every four hours. Youatt thus describes the disease and treatment :—The glands under the throat begin to swell, respiration and swallowing are impeded, hoarseness and debility supervene ; the neck swells and rapidly goes on to gangrene, the tongue hangs from the mouth and is covered with saliva. Bleeding and purgatives are indicated, with setons and punctures of the swollen glands.

Rectum Protruded.—In sows the rectum is sometimes pushed out during parturition, and after. Young pigs, and in fact swine at any age, are liable to this very unsightly and painful condition, particularly in cold weather. It is very difficult to control a sow and replace the rectum, as she will oppose all her strength to her benefactor, and when sutures are put in they seldom last, or else the rectum has to be unloaded by the hand of the attendant. In young pigs the operation is fairly successful if the diet is looked after. If, instead of blowing them out like drums with sloppy food, they be kept empty except for a little corn to 'stay their stomachs' for a few days, all will be well with them, and the old diet may be gradually resumed ; but with large hogs it is better to use a powerful astringent and let the rectum shorten itself partly by shrinking into its proper position, and partly by strangulation and sloughing of the outer portion. Of course, it is best, if possible, to return and retain it at once, but the owner does not usually consult a practitioner for a day or two. The following ointment can be applied when, from the size or ferocity of the sow, mechanical assistance cannot be given :—

Alum. Exsicc.	℥j.
Adipis	℥v.

M. ft. unguentum.

Some practitioners facilitate the sloughing process by painting a line of acid. carbolic. fort. at about an inch from the buttock, but it is hardly a safe plan to recommend, and owners are ever ready to advertise an *un*successful remedy. Mild laxatives are recommended and a truss for the protruded rectum.

Rheumatism in Pigs frequently upsets the calculations of the pig-breeder by making cripples of young and thriving pigs quite suddenly and without any apparent cause. Damp and ill-drained styes have naturally been blamed, but it is rather rare to find them dry, since the majority of pigs are not trained like house-dogs, and they soil their own bedding.* Our own experience is that they are just as liable to rheumatism, or joint-ill or joint-evil, as it is also termed, whether they be kept in the well-drained and cleaned buildings of a model farm or in the filth of a cottager's stye, with no floor but the earth and no bedding but garden refuse. The knees and fetlocks are the parts most often severely affected, much painful swelling and lameness resulting.

This rheumatism in pigs is known as cripples, joint-ill, joint-fellon, or lameness from swollen and painful joints. As already stated, it may affect pigs at any age, but it is particularly frequent among young pigs. It is to a large extent hereditary and avoidable; but it often happens that people buy a sow for breeding, and, if they inquire at all about her, it is as to her pedigree, and not her hereditary diseases, these being quite as common among the aristocracy of the stye as among crossbred and less valuable animals. The disease, pathologically, closely resembles rheumatic gout in the human subject, and it is more prevalent during the east winds of spring and after the autumn rains than at any other time. There is first stiffness and unwillingness to move, then swollen joints and constipation; great heat and tenderness often accompany this complaint, and a rigidity in some cases that resembles the effects of strychnine. (*See* p. 217.)

Treatment must be undertaken in the early stages of the disease, to be effectual. Outward applications often benefit pigs in the early stages, and some recover completely; but it is very little good to adopt any treatment when the enlarged joints have become hard and the lameness chronic. Such pigs seldom thrive, and are not worth keeping; they should be killed when the accompanying symptoms of fever have abated after a saline purgative or two. They are fit for human food if the temperature before slaughtering is, as ascertained per rectum, not over 100° F. The following are excellent applications:—

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* Injection of a 4 per cent. formalin solution near the joint is said to answer well, and is referred to, in connection with general rheumatism, on p. 218.

Liq. Ammon. Fort.	℥j.
Aq. Dest.	℥ij.
Ol. Lini	℥ivss.
Tinct. Iodi	ʒiv.

M. ft. linimentum, quotidie applicandum.

Lin. Saponis	ʒiv.
Tinct. Arnicæ	ʒij.
Tinct. Opii	ʒiv.
Aq. ad	Oj.

M. ft. lotio sæpe utend.

In the meal or wash may be given pot. nit. and sulph. nig. in doses of from five to ten grains of the former to one drachm of the latter daily, to pigs from two to six months of age. Along with the application of the soap and opium lotion, a brisk aperient of croton oil (♏ss. to ♏ij.) and castor oil (℥ss. to ℥iv.) should be first given, and afterwards one of the following mixtures:—

Sodii Salicyl.	ʒiv.
Tinct. Colchici	ʒiss.
Spt. Juniperi	ʒij.
Aq. ad	℥xx.

M. ft. mist. ʒij. ad ℥ij. bis die.

Potass. Bicarb.	℥ij.
Vin. Colchici	ʒiv.
Potass. Nit.	ʒiv.
Aq. ad	℥xx.

M. ft. mist. ʒij. ad ℥ij. bis die.

Doses of these mixtures may be administered alternately with advantage when the inflammatory action has been reduced. Or this *Rheumatism Powder*:—

Sodii Bicarbonat.	ʒij.
Potassii Bicarbonat.	ʒij.
Sulphur. Sublimat.	ʒij.
Antim. Nig.	ʒiss.
Sodii Salicylat.	ʒj. M.

To be given daily for a few days, and every alternate day thereafter. An embrocation should be employed to excite absorption of the gouty deposit which usually results. The following liniment may also be used daily:—

Tinct. Iodi	ʒiv.
Liq. Potassæ	ʒij.
Lin. Saponis ad	℥iv.

Snuffles, Sniffles, Nasal Catarrh.—There is first a slight discharge of mucus from the nostrils, gradually increasing till it causes cough, sneezing, and difficulty of breathing. The membrane of the nose becomes thickened and the nostril swollen and deformed. Blood is often discharged from the nostril, which gives temporary relief, but the hæmorrhage is apt to recur, and so undermine the animal's strength. The best treatment is the administration of copper sulphate night and morning, in doses of 3 to 5 grains, with good food and cleanliness. The disease is often fatal, and it is generally well established before it is noticed. There is a worm (*pentastome*) which makes its way into the spaces between the turbinated bones, and produces the same train of symptoms as those already described. It is very seldom dislodged, save by accident, or in the act of sneezing, and if suspected, a spoonful of snuff may be shaken in the stye to induce sneezing, or great relief is obtained by burning cayenne pepper in the stye.

Sprains, Sores, and Bruises.—Collections of pus must be opened, washed, and anointed with turpentine and oil till healed. Bad bruises, resulting from blows, should be rubbed with a mixture of 2 oz. of soap and 1 drachm of powdered camphor. Sprains may be treated similarly.

Straining in Sows after pigging is treated by washing out the womb with an antiseptic lotion (carbolic acid 1 in 40 of recently boiled water). Keep the bowels freely open by means of castor oil, with tr. opii ♏xx., and repeat the laudanum every four hours if there is much pain.

Stye, or **Blaine,** is a white blister the size of a pea on the tongue, which indicates a violent and very dangerous fever. There are also loss of appetite, dull eyes, rooting with the snout, trembling, and uneasy grunting. Relief is sometimes obtained by opening the blister and rubbing the wound with salt and vinegar.

Poisonous Swill or Wash.—Serious losses among swine are from time to time found to be due to deleterious substances mixed with the wash collected in large towns. The habits of the pig are such that most people think he prefers filth and is immune to ptomaines, but this is not the case. While the writer has had this chapter in hand, he has been consulted about two outbreaks in large herds, and representing many hundreds of pounds. Fermented vegetable and animal refuse thrown into a tub in warm weather, and perhaps covered up, affords just such a culture medium as the gentle microbe loves. It has long been known that pigs are easily poisoned by common salt, although it is an essential condiment, if not a necessary food, for horses, cattle, and sheep. Sulphur also in unnecessary doses proves poisonous to pigs. Of late years an added danger to wash has been found in the soap powders so generally employed for washing up dishes, pots, and pans. These things save labour, but careless and ignorant kitchenmaids often throw them into the hog-tub. In one of the outbreaks above referred to, a quantity of wash was taken, filtered, and evaporated, when salts of sodium and potassium crystallised out. The treatment consisted primarily in removing the cause, the administration of small doses of dilute mineral acids and gentian. The swine were suspected of swine-fever by the owner, but he was persuaded not to take extreme measures until the wash had been tested for sodium chloride and carbonate and potassium salts. The case is here mentioned as being of the kind in which the chemist is well able to solve the riddle and render valuable service to the pig-owner.

Swine Fever.—The diagnosis of this disease is not always easy, owing to the modifications it has undergone during the past few years. There is no dubiety at a *post-mortem* examination, as there is always ulceration of the ilio-cæcal valve. The Board of Agriculture, however, require the viscera of the suspected animal to be sent to London, where their experts examine, make cultures, and only decide when the specific bacillus has been found. Treatment should not be attempted, as the disease comes under the Contagious Diseases (Animals) Act, but owners of pigs should be advised to give notice to the police authorities *immediately*, as no compensation is allowed for pigs that are found dead, and a few hours may make a difference of many pounds. The owner must state that he believes the animals to be affected with swine fever.

Trichina Spiralis.—There are two kinds—one found in the muscle, the other in the alimentary canal. Those in the muscle have no sexual apparatus developed, and are rolled up in a spiral; those in the alimentary canal are straight. The young are hatched in the alimentary canal, and gradually bore their way through its walls into various parts of the body, causing great and excruciating pain, 'likened only to the pains of hell itself,' and then become encysted. They have a preference for the muscles of mastication, diaphragm, tongue, and intercostals, and at that part of the muscle where it plays into the tendon. Found in man, dog, pig, horse, rat, etc. Man gets them by eating infected pork (the capsule is dissolved in the alimentary canal), pigs by eating rats, etc., and the excrements of man. There is one male for every ten females. Twenty-four hours after the cyst is eaten the capsule is dissolved and the young escape. On the fifth or sixth day they copulate, and their wanderings last for nine or ten days. Thus if the patient affected can withstand the excruciating pain for sixteen days he may survive.

Worms.—It does not always pay to keep pigs, and never does to keep worms. If any are noticed in the dung, measures should be taken at once to get rid of them, as they multiply with astounding rapidity. For round worms give santonin and ferri sulph., and for the tapeworm class areca nut. Half a grain of santonin to each pound weight of the pig, and two grains of areca nut, are safe and, at the same time, fairly strong doses. These agents may be given in a very small quantity of milk or sloppy food after fasting twenty hours. Pigs should never be forcibly drenched if they can be induced to take medicaments in any sort of food.

The treatment of parasites is fairly hopeful, as the pig is a great glutton and possessed of such powers of assimilation that he can put on flesh and support a host of parasites as well, and the merely pendulous belly with a lot of unnecessary fluid in it may prove inconvenient, but so long as he will fatten he is worth keeping. Small doses of sulphate of iron, quinine, and a vermifuge will be found helpful (*see* Diarrhœa). Table salt may be given in small doses, but large ones are apt to induce an eruption ('the red soldier') and bring piggy under the notice of the village constable as a suspicious character—that functionary having always before his mind the detection of swine fever, and the *kudos* attaching to its discovery by a member of the force.

DISEASES OF DOGS AND CATS

THE ailments of dogs are numerous, and to prescribe successfully requires some familiarity with breeds, the relative weight of dogs as compared with the human body, their age as shown by the teeth, etc. But the prescribing druggist will best consult his own as well as his client's interests by not attempting operations requiring an intimate knowledge of the dog's mechanism. The physiology or vital processes of human and canine beings are very similar, man and dog both being omnivorous.

Sickness.—Vomiting when observed in the dog may be of his own seeking, and in this sense remedial, inasmuch as the dyspeptic animal, when he can procure it, will eat a few blades of couch-grass (*Triticum repens*), and be soon relieved by vomiting a frothy matter—composed of bile which has made its way through the pyloric end of the stomach, and of gastric juice which has been rapidly secreted by the mechanical irritation of the rough grass when swallowed. Sickness, again, may be induced by swallowing unmasticated food. Dogs are not, therefore, necessarily ill because they vomit ; and it may be assumed further that, with them, the sense of nausea cannot be present, or they would not, as they do, in the language of Holy Writ, 'return like a dog to his vomit.'

See also Gastritis and so-called Canine Influenza at pp. 298, 299.

The Clinical Thermometer can best be used by passing it into the rectum for about one inch, and holding the tail at the same time. Hardly any dog will resent the liberty, and without this instrument it is impossible accurately to gauge the temperature, as the practitioner is misled by the coldness or otherwise of his hand, the weather, etc. The popular notion that a cold nose is a sign of health is only partially true—a dog may be very ill, yet have a cool moist nose, or in perfect health, yet, lying in front of a fire, as dogs are so fond of doing have a dry hot nose.

To Hold the Dog.—It may not be out of place to remark here that among the initial difficulties of dog-doctoring is that of securing the patient in a position at once safe to the examiner and comfortable to the dog. He should not be held upon the lap of his mistress, as she will probably suggest, in order to calm his fears, for in that position he resents interference, and fancies he is guarding the sacred person of his owner. The same objection applies to seeing dogs at their own residences—if one may use the term—for here they are like the cock upon his own dunghill, and the dog that threatens you with big swears at home will often be as mild as the proverbial 'sucking dove' when brought to your shop.

In trying to examine any dog of doubtful temper, or who has been unfortunate enough to acquire the bad name which is so tenacious among his tribe, it is well to arm yourself with a long narrow strap, which should be placed on his face, crossed below his jaw, and buckled behind his ears.

With this contrivance you can defy the most savage dog, and throw him upon his back to extract a decayed tooth or for other minor operations. To keep a large dog down on the ground it is a good plan to attach three or four feet of rope to his collar and pass it twice round the hind leg that is uppermost, in the hollow just above the hock, pull it well forward, and attach it again to the collar. If an abscess is to be opened or a festered nail removed, this position will ensure safety to the operator and all concerned. The only assistant who should be disqualified is the owner of the dog, as his efforts to soothe the unfortunate beast are apt to mislead the animal, and make him suppose he is being thus treated against his master's will

The Administration of Medicines must in a large measure depend upon the nature of the remedies prescribed, but where compatible with the prescriber's notions of the case he will always select powders. Pills have the great objection that the majority of people cannot drive them down, and liquids are more frequently distributed indiscriminately over the administrator and the patient than passed down the gullet of the latter.

Powders, on the other hand, when not extremely bulky, have only to be thrown into the mouth, upon the tongue, and the saliva will give sufficient moisture to cause them to be swallowed, and insufficient to allow them to be dribbled out again. When, however, remedies are desired which cannot conveniently be made up into powders or electuaries, they should be formed, with some excipient, into very large pills, at least 10 grains for a small dog, as it is much easier to give a large pill than a small one, and quite as safe, as it is to be borne in mind that the œsophagus or gullet of the dog is very large—so large that he can swallow a bone which he cannot afterwards pass through his bowels. The method of administering a pill is to take hold of the dog's face, with your left-hand palm pressing on his nasal bones, while your thumb and forefinger exert a gentle pressure on each side of the upper lip, immediately over those large teeth called canines in the human being and tusks or tushes in the dog. This gentle pressure will cause him to open his mouth, and not close it on your other hand, if by the pressure of your left you make the lips just overlap the teeth. The right hand is employed in giving the pill, which should be held between the tips of the first and second finger, and pushed with some degree of force right over the back of the tongue, regardless of all anatomical considerations, as if you were trying to push it through the back of his head. If it reaches the fauces he will be sure to swallow it, as the act from there downwards is involuntary ; there is no danger whatever of its going the wrong way, as the epiglottis, or valve-like structure over the windpipe, is set on guard over that aperture the moment an aggressor enters the mouth. The alternative to a large pill which can be grasped is the *very small* one, which can be concealed in a *bonne bouche* (*see* Dog Medicines, p. 55).

In cases where ethereal preparations have to be given, they should be administered either in a gelatin capsule, or as a drench, which is not done by a gag, or by attempting to hold the mouth open ; on the contrary the teeth may remain shut, but a glance at them will show that plenty of room exists between them for a teaspoonful or two of fluid to make its way through the apertures. Having secured the dog, with or without a muzzle, insert your finger in the corner of his mouth and pull out his cheek, which will make an excellen funnel into which to pour his draught, and as soon as you relax your hold he will open his mouth and swallow it, to his own surprise as well as yours, if you have never tried it.

Baiting is often resorted to in administering—that is, by giving a piece of meat, butter, fish, etc., to the animal, which it often bolts straight away, then another piece containing the pill or powder can be given without detection.

Distemper is a very common disease, and may be defined as a very infectious fever with or without an eruption, which is communicable directly and indirectly from one animal to another. There are five forms—viz., hepatic, nervous, intestinal, catarrhal, and pneumonic. Catarrhal is the most common, pneumonic and intestinal the most fatal. In almost every case there is congestion or inflammation of mucous membrane of eye. In all cases absolute isolation must be resorted to. Red or salt herrings have a wonderful action in recovery. Keep clean and bathe eyes, nostrils, etc., frequently with medicated lotions, and smear the eyes with boric ointment.

Distemper may manifest itself at any period of a dog's life, as may measles in the human subject ; but it is commonly met with in puppies from eight weeks to eight months old. It accompanies the process of dentition, and is generally most acute when the large corner teeth or canines are being cut. These teeth are called tushes or tusks, which is a convenient distinction, as it is fair to suppose that all a dog's teeth are canine teeth. They occupy the same position, or nearly, as do the canines in the human being, the tushes in the horse, and the largest and most prominent of the tearing teeth with which the carnivora are endowed.

Dulness and loss of appetite are usually the first symptoms of distemper or any other illness of dogs, and a saline or other laxative at this stage will be safe and beneficial ; say—

Mag. Sulph.	ʒj. ad ʒiv.
Potass. Nit.	gr.v. ,, gr. xx.
Tinct. Jalapæ	♏x. ,, ♏XL.
Aq. ad	℥ss ,, ℥ij.

Pro haust.

In the course of a few days the symptoms will develop into one of three different forms, in which either the respiratory, the gastric, or the nervous system will be most affected, but a blend of two of these forms is by no means rare.

The commonest is that resembling measles, with which infantile affection medical men have most often compared it. In this a discharge of mucus from the nose, overflow of tears, listlessness, hurried respiration, cough, and unwillingness to move soon combine to make the disease unmistakable. It is at this stage that treatment is the most hopeful : it should be directed to the abatement of symptoms rather than seeking for a specific to counteract a poison which cannot be found, or an antidote to something the chemistry of which has not been ascertained.

Dr. Phisalix, of Paris, claims to have isolated and cultivated the specific bacillus of distemper, and has distributed a vaccine to veterinary surgeons in all the countries of Europe. Very glowing accounts have come from many countries, but there is much doubt in Britain as to its immunising powers. A committee of eminent veterinary surgeons conducted a series of experiments in London upon puppies supplied for the purpose, and *believed to be in perfect health.* This latter is the important point for our readers, because the experts disagreed as to the results. A majority decided that the vaccine did not give immunity,* while a minority held that the experiments were vitiated by one or other of the puppies having introduced distemper, or else that the premises selected were not above suspicion of holding the infection ; and, further, doubt was cast upon kennelmen for having been in contact with undoubtedly infected dogs. One member of the committee, and he perhaps the most profound student of any, fully believes that the Phisalix preparation is invaluable, and now (1915) distemper vaccine has established itself as an effective preventive and remedy for the disease.

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* CONCLUSIONS.—The committee consider the first experiment an entire failure, and the second inconclusive, but suggestive ; on the other hand, they regard the results of the third experiment as unimpeachable evidence that the vaccination failed to confer any immunity against distemper. The first two animals to die from distemper were the two vaccinated collies, and while both the control collies contracted the disease, one of them recovered. In the case of the Irish terriers, one vaccinated and one unvaccinated succumbed to the disease, but the first of the two to die was the vaccinated pup. The net result of the experiment thus was that three of the four vaccinated pups died from distemper, while only two deaths occurred among the four unvaccinated pups.

Turning from the experimental to the actual, we recommend that the dog's eyes and nose should be frequently bathed to keep them clear of the mucus, which dries and becomes a source of pain and irritation. The water for fomentation is improved by a minute proportion of carbolic acid and glycerin—as the former agent should deter the accumulated mucus from becoming fœtid, and the latter is calculated to soothe the excoriated membranes. This is a good formula:—

Glycerini	ʒij.
Acidi Carbolici	♏xv.
Aq. Dest.	Oij. M.

The following ointment is also a useful application:—

Alum. Sulph.	gr. iv.
Zinci Ox.	gr. x.
Vaselini	℥j.

M. ft. ung.

This should be applied to the eyelids and nostrils and smeared down the cheeks, to prevent scalding by the tears and accumulation of matter and consequent closing of the eyes. The eyes suffer ulceration and various other conditions consequent upon distemper. Boric-acid solutions may be used where carbolic acid is objected to, or formalin, lysol, soluble cresol, etc.

The before-mentioned remedies are merely palliatives; but if inflammation of the lungs follows, it is desirable to lose no time in applying counter-irritants to the sides of the chest—not in front, where the thick pectoral muscles cover the chest, but on the ribs from behind the elbow and above it to the last rib. Mustard answers as well as anything in most dogs, but in the long-haired varieties it is not so easily or effectually applied as lin. camph. co. or the preparation of white oils in common use, or—

Lin. Aconiti	ʒij.
Lin. Belladonnæ	ʒj.
Lin. Camph. Co.	℥iss.

M. ft. lin.

This should also be rubbed into the throat, as there is often much swelling and pain and an inability to swallow. The cough is not, however, due to the throat; it is not a dry, harsh cough such as characterises laryngeal affections, but is a soft, husky noise, and indicates effusion into the chest cavity or matter within the air-cells of the lungs. Such cases, when not fatal, are often very long about and are not calculated to bring much honour to the doctor. The best treatment at this stage is to give iodides with vegetable tonics. Iodide of potassium seems to produce or excite absorption of the effused matter better than anything else, but must not be given in conjunction with iron. The following is a good formula :—

Potass. Iodidi	gr. j. ad gr. iv.
Ext. Gentianæ	gr. ss. ,, gr. ij.
Quininæ Sulph.	gr. $\frac{1}{8}$,, gr. ss.
Excipient.	q.s. ut ft. pil.

Capt. j. nocte maneque.

The diet should consist of anything the dog will eat, including raw meat. He should be encouraged to move about a little, have his bed changed, and be given access to plenty of fresh cool water.

We have indicated the course usually taken by the disease, and, although there are three pretty well defined forms of distemper, they sometimes merge into one another, and the dog with inflammatory lung symptoms may at the same time have dysentery and fits.

The bowels should be kept regular by salines and enemata or castor oil, but the last-named is not so lasting in its action, and in the opinion of some good authorities is a positive astringent in its secondary effects.

After the urgent symptoms have passed and the dog is getting well, he may have a most distressing skin eruption coming up in great blotches or blains, giving out a sanguineous matter and drying up, or, if neglected, coalescing with other such spots and forming a large raw surface. It would seem to be an exertion or effort of nature to get rid of effete material over and above what the kidneys and other excretories are capable of eliminating, and is best treated by local antiseptics and internal oxygenation, if such a term may be used. Whether or not this theory be correct, certain it is that no remedial agents meet with such success as frequent doses of chlorate of potassium ; a small dog may have one grain three times a day, and a large one five grains. The following ointment should be daily applied to the sore places :—

Acidi Borici	ʒss.
Ung. Zinci Oxid.	℥ss.
Vaselini	℥ss.

M. ft. ung.

A liberal diet, with boiled green vegetables, will be found desirable.

The chlorate of potassium treatment is improved by a little nitre and charcoal—say, one to five grains of nitre, according to the size of dog, and the same or a little more of the charcoal.

The gastric or intestinal form of distemper shows itself in sickness, purging, wasting, and prostration. In a certain sense it is its own remedy, and the morbific matter is thrown off in the stools ; these, however, become bloody, the mucous membrane of the bowels is cast off in patches, and a condition similar to typhoid is established. The stomach loses power of digestion, and the intestines of absorption. Brunner's and Peyer's glands and the first part of the intestine generally become highly inflamed, and blood and mucus are constantly passed till the dog dies of exhaustion if no remedy is found capable of stopping it. Many have been tried, including, of course, the universal panacea of ol. ricini and syr. rhamni, also Æthiops mineral, antim. nig., antim. tart., ipecac., chloride of sodium, etc.

To modify the diarrhœa, small doses of alum ; to alter the acid secretions, small doses of sodii bicarb. ; to sheathe the abraded membranes and protect the glands, bismuth subcarbonate and glycerin ; to reduce the labour of digestion beef-tea, milk, and slops. The following mixture will do well in such cases as we have just described :—

Sodii Bicarb.	ʒi.
Bismuthi Subcarb.	ʒj.
Alum. Sulph.	ʒss.
Glycerini	ʒiv.
Aq. Carui ad	℥iv.

M. ft. mist. Dose—10 minims to 1 drachm every hour.

If powders be preferred, the following will be found suitable :—

Bismuthi Subnit.	gr. xv.
Sodii Bicarb.	gr. x.
Pulv. Ipecac. Comp.	gr. v.

Ft. pulv. One three times a day.

In the earlier stages much benefit is obtained from the following mixture; indeed, until the disease develops, it is often all that is required :—

Potass. Bicarb.	gr. v.-xv.
Spt. Æther. Nit.	♏v.-xv. M.

To be given every six hours.

The nervous form of distemper is the worst to treat, and, although it is reasonable to suppose that the fits and palsy are in the first instance caused only by the circulation of impure blood to the nerve-centres, yet an examination of numerous subjects would show that only a short time elapses in producing those degenerations of the spinal cord which leave a dog with 'the jumps' (chorea), or palsied, or subject to fits for life. Treatment, except in the early stage, is of very little use, and should then be carried out with a view to divert blood from the spinal cord to the surface or intestines, or both. Accumulating experience in the treatment of distemper induces the writer to place ever-increasing faith in potassium iodide, both as an antidote in the incubative period, or when first clinically recognised, and as a means of preventing that condition of the cord or its meninges which lead up to chorea and the other nervous troubles above alluded to. The prescriber may also advise three or four doses of sodium salicylate at the first appearance of spinal trouble. There is also a disease of the spinal cord which has been alluded to in connection with rheumatism, and to which the reader's attention is invited as bearing upon this subject of chorea (*see* p. 284). The application of a powerful irritant from the back of the head to the loins, such as mustard and acetic acid, or lin. camph. co., or ol. tereb., should not be delayed, and saline purgatives should be constantly administered. All the advantages of bromide of potassium as a sedative may be ensured to the irritable nerve-centres by giving it in small doses in conjunction with the salines, giving the dog moderate exercise, avoiding excitement, and looking carefully to the mouth to see if there are any teeth requiring to be removed. The following mixture is recommended :—

Potass. Bromidi	ʒj.
Potass. Bicarb.	ʒj.
Mag. Sulph.	ʒiij.
Aq. ad	℥j.

M. ft. mist. Dose—from 10 to 60 minims every four hours.

To be followed by this :—

Quininæ Sulph.	gr. viij.
Acid. Hydrobromic. Dil. . . .	♏XL.
Aquam ad	℥j.

Dose—a teaspoonful thrice daily. Double the quantity for a large dog.

The successful treatment of distemper depends more upon good nursing than upon medicine. The dog should be kept in a well-ventilated dry room, an even temperature being more desirable than a warm one; fresh air, clean water, and nourishing, easily digested food must be plentifully allowed. Exercise had better be refrained from till strength returns, and on no account should water-dogs be allowed their favourite pastime.

The nose and eyes should be frequently sponged, and in case of entire refusal of food, soups, broth, etc., should be forced. The combination of half a teaspoonful of port wine with the food, two or three times a day, will be found beneficial.

Besides the medical treatment already recommended, an emetic may be given at the outset—antim. pot. tart., in doses of from two to four grains, in butter or on a small piece of meat, being the best. The bowels must be kept regular by mild aperients, and for this there is nothing much better than the mixture of equal parts of castor oil and syrup of buckthorn —dose ʒij. to ʒviij.

When the more acute symptoms have subsided, the debility may be combated with stimulants and tonics. Some of the following medicines may be administered:—

Quinin. Sulphat.	℈j.
Pulv. Zingiberis	ʒj.
Ferri Sulphat.	ʒj.
Extract. Gentianæ	q.s. ut ft. massa

Divide in pilulas xij. One, two, or three every day.

Or—

Quininæ Sulph.	℈j.
Ammon. Carb.	ʒij.
Ext. Gentianæ	q.s. ut ft. massa

Divide in pilulas xij. One, two, or three every day.

For *diarrhœa* give a few doses of the following:—

Liq. Bismuthi	ʒj.
Tinct. Nucis Vom.	♏viij.
Acid. Hydrocyanic. Dil.	♏ij.
Liq. Morph. Hydrochlor.	♏v.
Aquam ad	℥j. M.

Dose—five to twenty drops.

When the more urgent symptoms have subsided the pills below will be suitable, as astringent and tonic:—

Ferri Carb.	ʒj.
Pulv. Catechu	ʒij.
Pulv. Opii	gr. v.
Cretæ Præp.	ʒij.
Conf. Rosæ	q.s.

Ft. massa et divide in pilulas xij. One, two, or three every day.

Distemper is sometimes followed by a form of paralysis, causing the dog to drag his hind legs. This is believed to be due to the obliteration of the spinal veins and pressure upon the cord. Sometimes the animal may recover if well fed and nursed, but more often has to be destroyed. The usual treatment is to give strengthening food, nerve-tonics, potassium iodide, to apply the galvanic battery, and sometimes a blister at the spine or a seton at the base of the skull. Cures have followed the administration of 5-grain doses of potassium iodide with 20 minims of liquid extract of ergot thrice daily.

Chorea.—This sequel of distemper is one of the most difficult of all diseases to treat, and has baffled the best canine surgeons from all time. It is apparently an interrupted or intermittent supply of nerve force to the muscles, and great benefit has sometimes arisen from the use of the galvanic battery applied twice daily for a long period. The hair on the dog's body should be thoroughly wet before applying the instrument, and the shock made increasingly powerful from time to time.

Sometimes cases have benefited by small doses, as $\frac{1}{64}$ of a grain, of strychnine daily, while some authorities, holding the theory of irritability of the spinal cord, prescribe sedatives, as pot. bromid. from 2 to 10 grs., chloral hyd. $\frac{1}{4}$ to 3 grs., ext. cannabis ind. $\frac{1}{20}$ to $\frac{1}{4}$ gr. We have known good results from each and all; also from blistering the spine with ol. tereb., and repeating every week or ten days. Arsenic in 2-minim or 3-minim doses of Fowler's solution has been employed with great success.

Chorea may occur quite independently of distemper. Occasionally we meet with a case of general chorea—*i.e.*, twitchings of the muscles all over the body; but usually the affection is partial, implicating merely a group of muscles, as of the face, neck, or a limb. The movements in chorea cannot be mistaken for anything else; they are involuntary, and best seen when the animal is quiet. Chorea may be the consequence of irritation from worms or diseased teeth; it may, it is said, follow an injury to the head, but most frequently it is a sequel of debilitating disease, especially distemper. Treatment is by no means satisfactory; some cases get well; but whether we should say they were cured, or that they recovered, is doubtful. Numerous drugs have been tried, and with perhaps equal success. Ether, ammonia, valerian, asafetida, quinine, and strychnine, salts of iron, copper, zinc, silver, and arsenic, have all found strong advocates.

Spinal meningitis must not be mistaken for the nervous form of distemper. The symptoms greatly resemble it, and chorea not infrequently results. (*See* Canine Influenza.)

The following medicines are sometimes attended with success:—

Liq. Arsenicalis	ʒj.
Tinct. Ferri Perchlor.	ʒij.
Inf. Gentianæ ad	℥ij. M.

A teaspoonful twice a day.

Or—

Zinci Sulph. vel Zinci Valerian. . .	gr. vj.
Quininæ Sulph.	℈j.
Conf. Rosæ	q.s.

Ft. massa et divide in pilulas xij. Two every day.

Mange in the dog is of two kinds, though all skin diseases in this animal are commonly spoken of as mange.

The common or sarcoptic mange is caused by a parasite (*Sarcoptes canis*), which very rapidly burrows and spreads over the dog's body, and may begin at any part; its rapid diffusion and the intolerable itching, as also its easy cure, distinguish it from the other form of mange, of which we shall presently speak. Its analogue in man is 'itch,' and its cure may be effected in the same way, for sulphur, being fatal to the parasite, may be considered a specific. Dirt and poverty do not actually cause mange, though favouring its contraction. It is very contagious and communicable from one dog to another either directly or indirectly. Disinfect all surrounding structures. The parasite burrows under the skin and causes the formation of small pimples, then vesicles, and finally scabs. There is extreme itching. It generally occurs on the fore legs, thighs, nose, around the eyes and anus. The hair falls off and the skin thickens and cracks. Wash in alkaline water and soap, remove the scab, and use—

Sulph. Nig.	℥j.
Creosot	ʒj.
Ol. Olivæ ad	℥viij. M.

Apply to the part daily.

It must be conveyed by contact with another dog, or lying upon the same mat, rubbing posts, furniture, etc. The remedy that will the soonest destroy the parasites and execute repair in the tissues will bring most *kudos* to the prescriber. Nothing answers better than the old recipe Professor Simonds recommended to his pupils, because it removes the superficial layer of skin ; one or at most two applications at an interval of three or four days will prove effectual. It is as follows :—

Ol. Picis	partes æq.
Ol. Olivæ	
Ol. Terebinth.	

M. ft. lotio.

A scurfy condition follows the use of this lotion (desquamation of the cuticle), but the hair rapidly grows again and is even improved by the stimulus that the roots have received.

An ointment is sometimes asked for, and therefore we give the following :—

Sulph. Sub.	℥j.
Potass. Carb.	ʒss.
Vaselini	℥iv.

Ft. ung.

The other form of mange is slower but more persistent, and is shown by the animal rubbing the spine under chairs, breaking the hairs along its course. It is often very slow in its development, but eventually spoils a dog's appearance, as well as rendering him very uncomfortable. It is caused by a parasite which selects the skin glands which are largest—namely, those capable of being erected when the animal is angry. Its name is *Demodex folliculorum* ; it is long and narrow, with eight legs of a rudimentary nature on the thoracic portion, and is found head downwards in the follicles. The following is good :—

Creosoti	ʒiv.	
Ol. Olivæ	℥vij.	
Liq. Potassæ	℥j.	M.

The hair should be closely clipped and the above application well rubbed in on alternate days for a fortnight.

This form of mange is by no means uncommon, yet often is not recognised till it has gained a firm hold, the rubbing being thought to be a disagreeable habit and its real cause not suspected

Eczema is a common disease among dogs, and often very troublesome to treat. It is commonly mistaken for mange, though having quite a different origin, and the remedies having nothing in common. It comes on usually without any preliminary symptoms, though a very careful observer might notice feverishness and restlessness before the skin becomes reddened—which is commonly the first thing noticed —all along the belly, thighs, under the arms and other hairless portions of the body. This intense redness is followed by the appearance of numerous small vesicles or bladders, which vary in size in different attacks, and when associated with distemper often have a distinct character of which we will presently speak.

Eczema, or spurious mange, may be an acute or chronic inflammation of the superficial layers of the skin. It is generally due to indigestion, and very often the liver, kidneys, etc., are infected. It commences with great itchiness on back and around the anus and eyes, also the ears and legs. There is an eruption of vesicles, which burst and leave a raw spot ; they also discharge serum. Isolation must be resorted to until such time as it is seen whether the disease is the contagious form or not.

The vesicles contain a thin, watery fluid, and not pus or matter ; they break, coalesce, and form scabby masses, which often cause further irritation to the surrounding sound skin, and so produce a confluent mass which may easily be mistaken for a burn or scald, but which had its origin in the vesicular eruption known as eczema.

It should be clearly distinguished from mange either of the sarcoptic or follicular variety, both the latter being parasitic in their origin, and only to be cured by remedies that will destroy the living ‘varmints.’

It is not infectious or contagious, and as often as not originates in a kennel to which no other dogs have had access, and where the sanitary arrangements are good. That all the dogs under one management or ownership may have it at one time is no argument as to infection, but rather a proof that like causes produce like results

Indigestion or errors of diet account for nearly all attacks of eczema, though many 'doggie' men are difficult to convince on the point, and much acrimonious correspondence has been produced by veterinary surgeons objecting to making any one dog-biscuit the sole diet for a long period. Most house dogs are over-fed. Besides his regular meal, or meals, a dog will certainly find some extras for himself if he gets the chance of running about loose, and the cook or the children cannot be prevented from providing some tit-bits, generally of an indigestible character, for their canine friends.

Couch grass (*Triticum repens*) is the one extra which the dog may eat *ad lib*. Instinct will lead the animal to it if there is any on the premises, and if the owner of the dog has no garden, any friend who has one will willingly give away all the couch grass he has if the applicant will only take it away by the roots—a very difficult matter. Dogs will eat it in their kennels if supplied with it freshly gathered.

Eczema is not infrequently the result of a too limited dietary, and sometimes an entire change of food from whatever has been given is the best remedy; we have known eczema cured with no other remedy than horse-flesh, and have seen a whole kennel made ill by a liberal supply of milk.

There are a great many theories and no little prejudice in this matter of dog-feeding, and we think, as the result of observations extending over thirty years, that dogs thrive best on a mixed diet; this notion is supported by a compromise between nature and art. Nature provides dogs with teeth of a character destined only for flesh-eating, while domestication makes it undesirable to give meat alone.

Treatment.—Give medicines such as liq. arsenicalis, sulphur, nourishing and laxative food; a dose of castor oil is often required. Do not foment or take off the scab. Apply the following:—

Ung. Zinci	℥j.
Acid. Carbol. Pur.	gr. x. M.

Apply daily.

Eczema in the dog appears to be accompanied by general acidity, and alkaline bicarbonates and saline aperients have proved the most valuable remedies.

In a simple case we should advise an aperient such as the time-honoured syrupus rhamni and ol. olivæ, rather than castor oil, which is such a bother to administer, followed up with such a mixture as the following :—

Pot. Bicarb.	ʒiss.
Mag. Sulph.	ʒiij.
Syr. Rhœados	ʒiij.
Aq. ad	℥vj.

M. ft. mist. Cap. ʒj. ad ℥j. bis die.

To allay irritation, and prevent the dog from scratching and wounding his own skin, a bath daily, of glycerin 1 part, water 60 parts—or, if he be a long-haired or delicate dog, not fit for the bath, a lotion of the same, sponged on to the affected parts—may be used. To this may be added potass. sulphurat. ʒj., if the simpler lotion fails.

Some customers prefer powders, and may be supplied with the following :—

Acid. Arseniosi	gr. $\frac{1}{4}$
Sodii Carb.	gr. xij.
Floris Sulphuris	gr. xxxvj.
Carbo. Animalis	gr. xij.

M. et divide in pulv. xij. One to be given daily in the food.

This dose is for a terrier of fifteen to twenty pounds. A very small dog should have half the quantity, and a large one fully twice as much.

Chronic eczema is more difficult to treat, as it too often happens that the subject is a pet dog, indulged with sugar and pastry, or 'stuffed' with meat to the exclusion of all other food. In addition to a change of food, and a course of salines, as previously recommended, we would say carefully wash and gently dry the patient with a soft towel, and then smear him well with ung. zinci ox., made softer and thinner than the B.P. preparation by the addition of ol. olivæ, 1 to 3 or 4 parts of the ointment, or an application may be used of liq. plumbi 1, ol. olivæ 50. A cooling dressing is the following :—

Liq. Potassæ	ʒj.
Ol. Olivæ	℥ix.
Liq. Plumbi	ʒiv.

M. sec. art.

A necessary caution may be entered here against the use of any external remedies which a dog may not lick with impunity. The above application should be well inuncted and finally wiped off with a soft cloth, if the patient is disposed to lick himself. In place of this very useful lotion we may supply :—

Chinosol.	℈ij.
Glycerini	℥j.
Aq. Menthæ Virid. ad	℥viij.

This will not harm an animal however much it may lick off, and it has proved effectual in many chronic cases. It is also suitable for cats, for which animals the chemist is often asked to prescribe in cases which are supposed to be mange but are really eczema. This acute or chronic inflammation may be due to mechanical or other causes, in which case a speedy cure can be effected by external treatment, but if constitutional internal remedies must be given, other treatment availing little ; in fact, the internal medicines being much more important than the external applications. The liver and kidneys are usually congested, and they must be restored to the normal condition by giving a little calomel or blue pill. Food must be given sparingly, and the cat must not be allowed to familiarise herself with scraps from the table. The following treatment gives good results. A blue pill or gr. j. to ij. of calomel is given with or without a dose of castor oil. Treat with the following for a week :—

Sulph. Sublimat.	gr. xx.
Potass. Acet.	gr. v.

M. ft. pulv.

Sig. : One to be given daily in food.

Sulph. Nig.	ʒj.
Paraffin.	ʒj.
Adipem et Lanolin. ad	℥j.

M. ft. ung.

Sig. : Rub on to the affected parts.

If no improvement is manifested in a week a parasitic form of mange is probably the trouble, and appropriate treatment must be adopted.

Some very bad as well as chronic cases of eczema in dogs have been quite cured by a persistent use of—

Acid. Carbolic.	♏x.
Ung. Zinci Oxidi	℥j.

M. ft. ung.

A bad case will require a *pound* or two, but persistent daily inunction of large quantities is worth trial for two or three months (in the case of valuable dogs) when all other agents have failed. Chronic cases sometimes yield to arsenic, in the form of liq. arsenicalis ♏j. to ♏iij. daily, and this may be given with food or drink, or dispensed with coloured water as a mixture.

An eruption resembling eczema is not uncommon in pups debilitated by distemper; it is not, strictly speaking, eczema, but seems to be an effort on the part of the skin to get rid of deleterious matter. It comes up on the inside of the thighs in large watery bladders, which develop into pustules, and leave a pit when they rupture. It very nearly resembles small-pox in its periods of papulation, vesication, pustulation, and desquamation, and requires emollient treatment locally and mineral tonics internally. Excellent applications are (*a*) menthol, ol. amygd. āā ʒij.; (*b*) menthol. ʒij., S.V.R. ℥iij.

For the comfort of dogs suffering from skin diseases, it should be remembered that straw, shavings, etc., form very irritating and comfortless beds; an old rug or soft garment should be provided, and afterwards destroyed.

Eclampsia.—Bitches are subject to a form of parturient disease called eclampsia. It is generally the result of suckling too many pups, and the symptoms much resemble poisoning by strychnine. There are tetanic spasms, rapid breathing, and the owner describes the animal as in a fit. The treatment consists in removing some of the pups, giving a sedative, as bromide of potassium 10 to 60 grains, a brisk aperient, nourishing diet, and exercise.

Constipation in the dog is much more frequent—we had almost said ‘natural’—than in other animals. The fæces of a healthy dog should be somewhat hard, and no heed need be taken of a moderate amount of straining in defæcation. It is just as natural for a dog to put himself into an attitude both anxious and ridiculous when defæcating, as for a horse to make so much ceremony before staling.

Just inside the anus are certain glands which emit an unctuous matter when pressed upon by the hardened fæces and the muscular efforts of the animal to pass the dung. They can best be compared to that part of a goose or aquatic bird which is known as the 'parson's nose.' It is a provision against constipation, while hardened fæces are normal and right in the case of these animals.

If, however, a dog is observed repeatedly putting himself into these attitudes, and nothing is found on going up to the spot, it is time to give him a little help. This is best done with an injection of soap and water, or of salt solution (common salt ʒiss. in a pint of warm water). A teaspoonful of liquid paraffin once or twice a day is useful, also a mixture of syr. rhamni et ol. ricini, partes æquales—dose from ℥ss. for a small terrier to ℥iij. for a mastiff or other very large animal. Constipation in the dog is very frequently caused by eating bones—not gnawing them—like those of mutton chops, game and poultry, which are easily crushed and more easily swallowed, and these make the light-coloured, dry, hard fæces which used formerly to be collected at street-corners for dyers' purposes. (*See* 'Anti-Constipation Pills,' p. 55.)

Youatt recommends an aloetic ball; but the objection to aloes is that dogs are so easily nauseated by it, and one does not care to give a ball more than once. Castor oil also necessitates a bath afterwards in long-haired dogs, whose muzzles are rendered sticky and wretched, if no greater failure occurs in administration. Mag. sulph. is an aperient preferable to all others, and this should be given in several small doses rather than in one heroic drench. Injections of glycerin and frequent warm baths give great help in overcoming the disorder.

The following is a suitable mixture for habitual constipation :—

Mag. Sulph.	℥j.
Syr. Rhamni	℥ss.
Tinct. Chlorof. Co.	ʒss.
Aq. ad	℥vj.

M. ft. haust. Capt. ʒij. ad ℥ij. omni mane si opus sit.

Some green food, as boiled cabbage, spinach, etc., mixed with gravy and table refuse, should be recommended, but not much, for we have in our minds, while writing this, the case of more than one lady whose pet has become intolerable from the evolution of gases at both ends of the dog.

The following is a good *Aperient Pill*:—

Pulv. Jalapæ	gr. x.
Pulv. Cambogiæ	gr. x.

M. ft. pil. Pro re natâ.

It has been pointed out elsewhere that powders are the easiest form of medication for dogs, and a simple aperient of 10 to 20 grains of pulv. jalap. may be thrown upon the tongue. It may be fortified with a grain or two of calomel, where the pallor of the fæces indicates inaction on the part of the liver. Dogs can bear one fairly large dose of calomel, but are prone to salivation when it is repeated. It may, in fact, be said that where 5 grains of calomel would be quite safe as an aperient, ten doses of half a grain each would very likely induce mercurial poisoning.

Jaundice.—This is not infrequently a sequel of distemper, though it also occurs in old dogs, and quite apart from the disease, or host of diseases, classified under the generic term distemper.

In jaundice succeeding or co-existing with distemper, it is not advisable to give liver stimulants. There is often vomiting and blood passed with fæces. Give prussic acid, bismuth, aconite, opium, sodium hyposulphite, etc.

This malady should be readily recognised, yet we are in a position to say it seldom is until it has made serious inroads on the dog's constitution; his attitude and demeanour report headache, nausea, languor, loathing, disgust, more plainly than words, and his mute eloquence must appeal to the veriest dog-hater.

If the white of his eye (conjunctival membrane) is examined, it will be found yellow in colour, or even dark orange in tint, and this extends to the skin. If the nude parts are examined and the inter-digital spaces, the colour will at once tell the prescriber what he has to deal with.

Sometimes a number of hounds will be affected with this complaint at one time, and then it may be traced to errors of diet or environment, but in the cases brought under the notice of the everyday practitioner it is generally due to an idle life, indulgence in rich food, and, more than anything else, to lying in front of a fire persistently. The treatment must be bold and energetic. If the disease is not grappled with at once and heroic remedies administered, the patient will be dead before the milder system has had time to be tried. Dogs, like babies, can take very large doses of calomel, and we look upon this agent as our sheet anchor. We are not afraid of ten grains for a small dog or twenty grains for a hound or any other of the large breeds—not to be repeated, of course. It is not the bold dose that brings about salivation ; it is the repetition of small, and for this purpose ineffectual, doses. Salines may be given afterwards. Mag. sulph. ʒj. ad ʒiv. c. inf. quassiæ does well. Exercise should be enjoined, light food, such as milk puddings, fish (beware of bones), lunch biscuits, etc. Dogs need not be drenched with food if they refuse it ; there is no domestic animal capable of such long-continued abstinence as the dog—not even the cat. Fasting cats get in at open larder-windows and snap up ‘ unconsidered trifles ’ at hours when a respectable dog is on guard duty. Cats sometimes suffer from jaundice, but—alas for the harmless necessary cat !—her ailments are not generally observed till too far advanced for any remedy but acid. hydrocyanic. ʒj. *secundum artem*, unless she sneeze or cough, when she is hustled out of the house under the impression that she is going to be sick. We owe poor pussy some reparation ; she is a social martyr because not generally understood.

Rheumatism and Gout.—Veterinarians are agreed that dogs are unquestionably subject to these troubles, and that they are, of all domestic animals, the most liable to rheumatism. In their case it is not so frequently a joint affection. More usually it is the muscles of the chest and shoulders, and sometimes of the loins, where the attack occurs. It comes on very suddenly, and is more amenable to treatment than in man. It is called 'kennel lameness' among hounds, and is known to most sportsmen. Lapdogs and all other breeds are subjects of it, whether exposed to bad weather or not, but sporting dogs are more susceptible than house dogs. It is not very difficult to diagnose, as the patient cries out on being lifted by the forearms or goes very stiff—all in one piece—when lame in the loins.

Dogs suffer from all the degenerative changes common to man, and from uric-acid troubles most conspicuously. Every form of senile decay in man has its counterpart in pet dogs. If one will read any of those cleverly written pamphlets on uric acid which advertisers distribute with their specialities, one will learn to look for the same symptoms in dogs, even to the eczema between the fingers: only that they are called toes. Lameness, stiffness in rising, lumbago, acute muscular pains, and chronic irritability are but a few of the many troubles in dogs associated with the rheumatoid condition. If for a moment we consider the habits of indulgence in which old dogs delight, we have the key to their trouble. If they do not drink alcohol, they make up for it in excess of meat and sugar. The busy chemist who may turn to this page will perhaps be saved time if we advise him to prescribe just such remedies for canine patients as he is accustomed to dispense for bipeds: only making his calculations as to doses by their estimated relative weight to the human subject. He will hit off his doses better in this way than by reading recipes here, as dogs differ so much in size, from the two-pound toy to the two-hundred-pound St. Bernard. The prescriber for rheumatism in dogs should read the remarks on meningitis, because it is generally supposed to be rheumatism.

Dogs are also liable to rheumatic fever. It does not often take this form, but the subjects of it are the most piteous objects—curled up in a heap, unable to move without crying out with agony, with a very high temperature, and an odour something like that of a kennelled fox.

Salicylates, in doses proportioned to the weight of the individual sufferer, have proved the most suitable remedies, but very few dogs get the necessary attention. All animal food must be withheld and a diet of milk and light puddings prescribed ; spoon feeding during some part of the illness.

Treatment of the Common Forms of Rheumatism.—Put the dog on a milk diet and apply daily the liniment for horses referred to on p. 168. Give the following mixture :—

Vin. Colchici	♏iij.
Sodii Salicyl.	gr. v.
Aq. ad	ʒj.

M. ft. dosis. Bis die.

Rheumatism seldom settles into the chronic form in dogs, but may become frequently remittent, and the mixture and liniment should be kept in stock for such subjects. These are the cases in which a veterinary prescriber may cover himself with glory and get appointed as canine surgeon in ordinary.

Rheumatic dogs should be but rarely washed. All that is necessary to keep them clean is to rub in *ad lib.* powdered fullers' earth, after which the animal is to be combed and finally brushed with a hard brush. If very dirty, the dog may be sponged with a damp cloth before using the powder. Unless a medicated bath is needed to destroy vermin, none of the so-called dog soaps should be advised. They all contain an excess of alkali, and rob the skin of its unctuous protection. Many cases of scratching are brought to veterinary surgeons, without any definite skin disease, or even redness, to account for the persistent and annoying habit of scratching or ‘digging,’ as our West Country friends persist in calling it.

The skin is rendered dry, and no doubt feels tight, for lack of its natural grease. The use of a superfatted soap should be advised. A *Concentrated Bath-fluid* for very occasional use may be made as follows :—

Saponis Mollis	℥viij.
Acid. Carbolic.	ʒiv.
Aquæ Bullientis	℥XL.

Dissolve the soap in the hot water, and add the acid last with stirring. This may be coloured and perfumed to fancy.

Directions.—Wet the dog thoroughly with warm water, beginning with the face. Pour the bath fluid along the back and work up a copious lather on every part of the animal, adding more water and bath fluid as required. Rinse well in tepid water, wipe dry, and finally exercise.

Meningitis, or **Chronic Ossifying Pachymeningitis.**—This is rather a big mouthful in the way of titles, but it fairly represents the state of things when far advanced. Dogs attacked show symptoms corresponding to either acute rheumatism or else paralysis. At other times the pain resembles neuralgia, and a paw will be held up as though wounded and the patient cry out with pain. These varying symptoms depend somewhat upon the part of the spinal cord affected. If the cervical portion, the front limbs may be affected as above described, or the neck will swell up like that of an angry bull, subsiding again in a moment, but subject to repeated muscular spasms. If the lumbar region is implicated, there will be lameness of a hind limb or paralysis of both. There is nothing in the early stage of this spinal cord trouble to distinguish it from other forms of meningitis, but with repeated attacks, or a first one neglected and occurring in a very old dog, there is soon a hardening of the meninges, a conversion into material not distantly resembling bone, from which recovery is not to be expected. Some degree of accommodation may be effected, and the patient brokenly live on; but to be successful in the treatment of the malady we must be asked to prescribe early.

Treatment.—A brisk aperient; large doses of sodium salicylate, followed up by alkaline bicarbonates and potassium nitrate; a farinaceous diet; regular but not excessive exercise; abstinence from sweets. This disease has long been treated as rheumatism, and with much success where the salicylates have been chiefly employed. When these get 'worn out' we must resort to colchicum, and ring the usual changes, as for gouty and dyspeptic 'humans.' Among the outward remedies ammoniacal liniments are valuable, but nothing is so effectual as linimentum potassii iodidi cum sapone, or a cheaper preparation composed of tincture of iodine 1 part and soap liniment 3 parts.

Gastritis in Dogs is often the result of over-feeding, or of the presence of irritants in the stomach, splinters of bone, especially fish-bones, becoming lodged in the lining membrane. Frequent vomiting of almost clear water is a prominent symptom, and inability to retain any food, marked thirst, and rapid loss of condition. In bad cases the dog will often seek a cold stone or pavement, and stretch out upon his belly, as if to cool the burning sensation he doubtless experiences. It is by far the most frequent and common disease in the dog. Along with the symptoms mentioned there is pain of the belly and often super-purgation. An emetic should be given, and castor oil in earlier stages.

Treatment.—Severe cases of gastritis often yield to a very few doses of—

Bismuthi Subcarb.	gr. iij. ad gr. x.
Acidi Hydrocyanici Dil. . . .	♏j. ad ♏iij.
Pulv. Tragac. Co.	gr. ij.
Aq. ad	ʒiss.

Ft. dosis. 4tis horis sumend.

Quininæ salicylatis, gr. ij.–iv., twice daily before food, is beneficial both in gastritis and in gastro-enteritis. The bismuth, morphine, nux vomica, and hydrocyanic mixture (p. 283) is also good. The patient should have abundance of ice-cold water supplied him, or ice-water spooned down every hour, with 5 to 10 minims of brandy in very bad cases. No solid food should be given, but milk and milk puddings, gradually increasing the quantity, and by degrees reverting to his former diet. Cats show much the same symptoms, and the treatment above suggested is equally applicable, modifying the dose to the comparatively small animal to be treated.

Enteritis, like gastritis, is caused by irritants, such as the indiscriminate administration of medicines, by worms, etc., or by stoppage and twist of the bowels. There is pain in the belly and intense vomiting, with pain on pressure or handling.

Give warm bath, poultice, enemata of glycerin and morphine, anodynes. Remove the cause if possible when ascertained.

Hæmorrhagic Contagious Gastro-Enteritis (Stuttgart disease, or canine typhus) is a virulent disease closely related to distemper, the main difference being that there is no catarrhal discharge from the eyes and nostrils, and old dogs are usually affected. The illness commences with vomiting, which is followed by repugnance to food, prostration, emaciation, dirty saliva, bloody and fœtid stools, and latterly dark and thickened patches on the lips and tongue, with excessive twitching of the muscles of the body. It is usually fatal, and treatment is rarely successful.

Canine Influenza does not resemble the human form in which the respiratory mucous membranes are affected, but most commonly commences with sickness, and is followed by the usual train of symptoms previously described as 'gastritis.' At other times it affects the meninges of the spinal cord and brain, and according to the portion involved and the degree of intensity so are the effects. One animal will be 'fitty,' another paralysed, and others will show mental aberration, or lameness resembling rheumatism.

Treatment.—The majority of nervous cases will do well on quinine and hydrobromic acid—rather large doses of the latter. Small dogs will take two grains of quinine and seven drops of acid three times a day, and the dose may be doubled or trebled for medium and large animals. The prescriber will vary his spinal sedatives, especially if no marked results are obtained from the above. He may give three to twenty grains of bromide of potassium or ammonium, or in very 'jumpy' cases two to ten grains of chloral hydrate. Any mixture he may decide on will be the better for some inf. gent. co. Great prostration follows, and the dog should be 'strung up' with tonics until again robust and feeding well.

Worms in Dogs.—All tapeworms have to live in a cystic stage in another animal than the host, a so-called intermediary. Thus *Cœnurus cerebralis* in the head of the sheep, producing 'sturdy,' develops into *Tænia Cœnurus* of the dog. *Tænia echinococcus* is the smallest of the tapeworms: it only consists of three segments. The cystic stage is passed in the liver, lungs, etc., of cattle, sheep, and goats. It is one of the largest of the cysts. The cystic stage of *Tænia marginata* is passed in the mesentery and entrails of ruminants, pigs, man, etc. Of all the varieties of tapeworm infesting dogs, it is the commonest. Dr. Cobbold estimates its presence as in 25 to 30 per cent. of dogs in England, 14 per cent. in Denmark, and 75 per cent. in Ireland. Sporting dogs, as a rule, suffer more from tapeworms than house dogs and pets, as the larval or cystic form of some varieties infests the entrails of hares and rabbits, the 'fifth quarter' of which is often the dog's share of the spoils. The cystic stage of *Tænia serrata* is also passed in hares and rabbits. The cystic stage of the *Tænia* of sheep and horses is not known, nor where they live.

Another variety, called *Bothriocephalus*, is found in fish, and seaside dogs and cats suffer most from this. It is not a proper tapeworm. The eggs hatch in water and open by a lid. It has no definite cystic stage: when the embryo enters the alimentary canal it develops at once into a worm. The dogs of Norway and Sweden, whose masters live almost entirely upon fish, are hardly ever free from this kind of worm. The cat who follows the fishmonger's barrow, and devours the offal during the cleaning of fish, is a very frequent victim, and wastes away to a shadow without the cause being, as a rule, ascertained. Cats are most difficult animals to treat, and, owing to their extremely scientific ideas of sanitation, it is often impossible to tell whether medicines have acted upon them, except by the improvement to be noted afterwards.

All the tapeworm class can be ejected by pulv. arecæ, and that agent is worthy of the faith that was at one time placed in it. If it fail, it is because the powder is old and has lost its 'virtue.' Dog-dealers and others are fully aware of this, and prefer the difficult task of rubbing the nuts on an ordinary nutmeg-grater to buying the finely levigated article of the shops.

As dogs are of all sizes, from the nude little terrier whose owner prides himself on being able to put him into a quart pot, to the massive St. Bernard or Great Dane, one cannot put down a dose without some sort of sliding scale ; and this may be found in the estimate of two grains of the powder to each pound weight of the dog.

The practice of giving worm medicines on an empty stomach has the sanction of long usage, though remedies often take effect when given in food—a fact worth bearing in mind if the animal wears a forbidding expression and the owner is unwilling himself to run the risk. The dose should be repeated at intervals of a few days, as some worms are most tenacious of life, and can 'brokenly live on' just as well as if entire ; indeed, the tapeworm class differs from all others, inasmuch as any two segments can impregnate each other, being bisexual and capable of producing some 30,000 eggs. Wholesale druggists who specially cater for vets. have of late years supplied very convenient capsules containing male fern extract in doses of 5 to 30 minims.

Male fern extract, as usually dispensed for human beings, can seldom be retained by dogs long enough to be effectual, but a very good pill made of the following ingredients is often used with success, and, as it is not always known from what particular kind of worm a dog is suffering, it is worth while to give him a charge that will hit either :—

Santonin	gr. ij.
Powdered Glass	gr. v.
Powdered Areca	gr. xx.
Oil of Male Fern	sufficient to make a pill

To be pearl-coated or silvered.

Some 'doggie' people recommend the areca to be given at night and a dose of castor oil in the morning. To make sure of removing all the worms an animal should have at least two doses given at an interval of a week. In place of areca-nut, wormseed or santonica may be used. The dose of the powdered seed for a medium-sized dog is about six grains, given as a pill in the same manner as areca-nut.

'Stonehenge,' in his work on the 'Greyhound,' recommends Indian Pink as a vermifuge; an infusion of half an ounce, in a pint of boiling water, to be given, when cold, at night, and followed by castor oil in the morning.

The tapeworm is by no means so easily removed. (*See* Gid in Sheep, p. 252.) This parasite attaches itself to the intestine by hooks situated on its head, and as it grows detaches the posterior joints filled with eggs. The presence of these joints in the fæces of the animal corroborates a diagnosis. The chief difficulty is the head, for so long as it remains attached the parasite grows and causes irritation, sometimes fits.

The ordinary anthelmintics seem to be powerless on the tapeworm. We consider the best to be the oil of male fern, given in linseed tea, or tied up in a small piece of sausage skin. The dose for a medium-sized dog, say a bull terrier, is about half a drachm. It should be repeated in a week or so, and if the dog is weak a little tonic medicine is required. Another drug very highly spoken of by some is the Abyssinian kousso. The dose is from four to eight drachms.

The best general anthelmintic for dogs is areca-nut and santonin, with or without male fern, as in the following pill for a small dog :—

Pulv. Nucis Arecæ	gr. v.
Pulv. Jalapæ	gr. ij.
Santonini	gr. j.
Ext. Filicis Maris	q.s.

To be given fasting. Modify the dose according to age, size, sex, and condition of the animal.

If it is decided to give a dog ol. filicis or other agent known to excite nausea, the animal's mouth should be strapped so that he cannot open it, and his head tied up in such a manner that he cannot depress his nose between his legs. This will deter him from vomiting, as he cannot do so without putting his head down.

Fits in Dogs.—Convulsions are most commonly met with in young dogs, and may generally be traced to some irritating cause, as worms in the intestines, or the natural changes in the teeth. *Ascaris margina* is very common, and causes convulsions and even death. Treatment is remedial and preventive.

If the creature is brought to the pharmacy while actually in a fit, the V.C.P. may cover himself with glory by extemporising a cardboard muzzle and causing the animal to inhale chloroform through a sponge. To prevent the return of fits, after removing any probable cause, the following pill may be given :—

Arsenic. Alb.	gr. j.
Ferri Sulph.	gr. xx.
Ext. Gentianæ	q.s.

Ft. massa et divide in pilulas xv. One every day.

Pot. bromid. gr. xv., combined with chloral hydrat. gr. x., is often serviceable in these cases. Order exercise, good food, and a dry house.

Fits or convulsions often occur in distemper, and are more frequent and of shorter duration. Treat by cold water on head and moderate stimulants, and when recovered pot. brom. and camphor may be given. In grown dogs treat for worms and give purge.

Apoplexy and Epilepsy.—Many glaring mistakes are made in diagnosing these diseases one from the other, but by careful study and a close observance no doubt should exist. An apoplectic seizure or shock gives no warning whatever : the animal, being suddenly struck down, becomes unconscious and prostrate, and death frequently occurs at once. In epilepsy the dog is convulsed, involving the body, face, eyes, jaws, etc. The fits or convulsions occur frequently, and during distemper they may follow one another at short intervals of a few minutes, but sometimes, though rarely, several days intervene between the fits. Their duration is not long, varying from a few seconds to several minutes. Epilepsy is caused by external and internal injuries, distemper, worms, excitement, irritation of the bowels or alimentary canal, constipation, spinal and brain diseases, etc. In its treatment pour cold water over the head, give inhalations of ammonia, administer volatile stimulants, and allow plenty of pure air. Make inquiries as to the cause, and get it removed. The following rules should be laid down for observation :—

(*a*) Avoid all exciting influences.
(*b*) Feed on light and easily digested food.
(*c*) Keep bowels in a regular and moderately loose condition.
(*d*) Satisfy yourself as to the presence of worms, and treat for same.
(*e*) Diuretics and potassium bromide to be given daily until such time as danger is supposed to be over.

Apoplexy is a loss of consciousness of the voluntary motion and sensations, due to a morbid state of the brain. The muscles of the face, eyes, and jaws are not usually affected, as in epilepsy. In the treatment of apoplexy give a quick purge ; ol. croton. is best. Seton between the ears. Resort to any depletive handiest at the time. Pure air, stimulants, warm baths, and enemas of glycerin, olive oil, or soap and water are also useful. Careful and constant nursing and attendance must also be given in the earlier stages of the disease.

Canker.—This is a thing upon which the counter prescriber is frequently consulted and with which he should be familiar, for the patient can be brought to him and treated at his own pharmacy. It has been definitely ascertained that the majority of cases of so-called canker originate from parasitic invasion. A mite of the mange class finds its habitat in the meatus of both dog and cat (*Symbiotes auris canis vel felix*) and causes the primary irritation. This mite is also responsible for many of the 'fits' from which cats suffer, more especially fancy cats bred in confined spaces. The movements of a number of these parasites cause some pain and much nervous excitement —so much so that kittens will madly rush about and hide beneath pieces of furniture as if a nameless individual were in hot pursuit.

The old remedies, such as argenti nit., cupri sulph., etc., cannot be too strongly condemned, and he who would be successful in the treatment should remember the cause and origin of canker, and not treat it as he would an ulcerated condition in any other part of the body. All dogs are liable to canker, but those with long ears are chiefly affected. Water dogs, such as spaniels and retrievers, are perhaps the most frequent subjects. The ear of the dog, we may remind our readers, has on its inner surface two kinds of glands, which secrete respectively wax and an unctuous matter for keeping the ear soft and pliable. These glands, when irritated by the parasites above named, or by dust, water, or other agents, become inflamed, and instead of lubricating and protecting the parts, they give out an acrid matter which soon again spreads the inflammatory area and ends in ulcerations, which may be of any shape and size, but are oftenest found as cracks.

Instead of pouring in irritants and increasing the pain and inflammation, the ear should be softened and the morbid products broken down in the first place by an oily application whose composition shall be such as to destroy the symbiotes. The following can be recommended :—

Ung. Hydrarg. Nit.	ʒj.	
Ol. Amygdalæ	℥iiiss.	M.

If this is warmed in a teaspoon, previously dipped in hot water, and poured in gently, the dog will not resent it. This is most important, as first impressions go a long way with a dog. If frightened by the first dressing, or the irritants previously used, he will always be a troublesome dog, and never jolly dog, to treat. This done on two or three successive days the dog should be firmly but kindly held while the meatus is cleaned out with cotton wool on a bone penholder or blunt forceps, care being taken to remove all the *débris* without injuring the sensitive lining of the ear. Then drop in twice a day a few drops of the following :—

Iodoform.	ʒj.	
Pulv. Opii	ʒj.	
Ol. Olivæ	℥j.	M.

The following simple lotion should next be used, warming as previously advised :—

Liq. Plumbi	♏x.
Glycerini	ʒss.
Aq. Sambuci ad	℥j.

M. ft. lotio. Quotidie applicand.

Or this, which has a great reputation among canine practitioners :—

Zinci Oxidi	ʒj.
Zinci Sulphat.	gr. x.
Acid. Borici	ʒss.
Glycerini	ʒiv.
Aq. ad	℥iij.

M. ft. lotio.

If old ulcerations are present, we recommend, after the cleaning process, no stronger application than—

Acidi Carbolici	♏x.
Ol. Amygd. Dulc.	℥j. M.

There are some old-standing cases that are incurable, chiefly because the owners will not take the necessary trouble themselves or pay others to do so. The remedies above mentioned will mitigate the pain and subdue the offensive odour if nothing more. External canker is a vague term applied alike to ulcerated flaps and serous abscesses.

In treating canker we should give alteratives, such as daily grain doses of flor. sulph. or the following :—

Sodii Bicarbonatis	gr. iij.
Flor. Sulphuris	gr. xij.
Carbon. Animal.	gr. ix.

M. et divide in pulv. xij.

Such small and comparatively tasteless powders as these can be given in the food. Patients should not be allowed to enter water, and if pet dogs must be washed, care must be taken to keep the ears dry by plugging with cotton wool.

Serous Abscess of the Ear.—Many dogs and cats are permanently spoiled by an ear trouble which might be easily cured if taken in time and properly treated. Between the skin upon the inner aspect of the lobe or flap of the ear and the cartilage which it covers, a fluid, or so-called serous abscess, is easily provoked, frequently by fights with other dogs or cats. Without warning a lop ear is found to have become a prick ear, or a prick ear is seen to be distended, as if blown up with wind. It is not wind but the serous fluid, which should be evacuated, or it will become organised and solid, and exercise such pressure upon the blood vessels which supply the lobe that it will presently wither and ruin the appearance of the animal, besides giving it much needless pain.

Treatment.—There must be no half measures; no feeble funky pricking at it with a lancet, but the whole length of the skin had better be slit at one bold stroke: it will give less pain than the method above condemned. Then a lining membrane will be found such as we expect in cysts. It may be likened to the skin inside an egg. It differs, however, in its office. It can keep on secreting fluid which will fill up the space again, and seal up the orifice too unless made in the bold manner advised. Without a suitable dressing it will often do so despite a very long opening. There are two methods of preventing this undesirable union. One is to scrape away and pull out with forceps all that remains of the cystic lining and inject with tincture of iodine. The other is to put two or three sutures through the skin and through the cartilage of the ear also, pinning it apart really. The writer has treated many cases, and regards the daily injection of tincture of iodine as the most satisfactory. It is absolutely successful if done thoroughly, and despite the pain the poor animal suffers. The meatus should be plugged with wool while these injections are going on, or some of the fluid will run down into it and add to the misery of the patient. The finishing touches can be put to the treatment by the free use of zinc ointment.

Deafness.—Dogs are frequently deaf, but there are fewer deaf dogs about since the barbarous practice of cropping the ears has fallen more or less into desuetude. It is to be hoped cropping will altogether disappear, as clubs are beginning to disqualify cropped dogs from taking prizes at shows. There is not much to be done for deafness in dogs unless it is traceable to some recent injury or blocking-up of the ear with wax and dirt. Some of the large-eared hairy breeds of dogs get mats or tags of woolly hair formed on the inside of the flap, making the ear sore by its weight and friction, and by preventing natural evaporation the base of the ear becomes inflamed, and a green offensive pus is produced. The remedy for this is fomentation with warm water and glycerin, with an antiseptic; careful removal of matted hair with scissors; and the daily application of the following ointment:—

Ung. Zinci	ʒij.
Ol. Amygd. Dulc.	ʒiij.
Lanolini	ʒiij.

M. ft. ung.

The poor dog for whom this little office is performed will quickly repay the trouble in his improved appearance and brisk manner, if not by his gratitude.

When deafness is the result of a blow or a fall and comes on suddenly, a brisk aperient, such as mag. sulph. ʒj. cum tr. jalapæ ♏xv. (for a terrier), will have the effect of diverting congestion.

Slit ears and gun-shot wounds in sporting dogs are common enough, and cause a great deal of pain to dogs, without, as a rule, getting any treatment. They should be gently handled and dressed with the above ointment, unless a shot or thorn is found, when it should be removed. Injuries to the flaps of the ear are often very troublesome to heal, as the patient inflicts fresh wounds with his foot in vain efforts to allay the irritability. Bandages upon the head or ears we do not recommend; the only exception we would make is in the rare instance of keeping a pad on a dislocated or seriously injured eye.

Pneumonia, or **Inflammation of the Lungs.**—This disease is by no means uncommon in dogs. It is frequently the result of distemper, and often leads to heart affections and pericarditis. The dog becomes suddenly languid, his nose is hot and dry, he loses appetite, assumes a lying posture, but is restless and frequently moves. At a rather later stage of the disease he prefers to sit with his head in the air, mouth open, and wearing an anxious look on his face. Breathing is short and painful, the cough frequent and dry. His mouth is dry, and his urine is high-coloured. Sometimes a reddish mucus runs from the nose.

Treatment.—The first thing to do is to place the patient in a moderately warm, airy room or shed. A mustard plaster should be applied to the chest, and an embrocation of lin. camph. co. rubbed into the adjacent parts. For internal administration give the following dose twice or three times a day :—

Vin. Ipecacuanhæ	♏v.
Tinct. Aconiti	♏ss.
Tinct. Camphoræ Co.	♏x.
Glycerinum ad	ʒj.

This is for a fair-sized terrier ; for a St. Bernard twice the above might be given. Inhalations of tinct. benz. co. are found beneficial.

Hot Feet.—An inflammatory disorder attacking the feet of dogs, caused by long runs on hard dry ground. The paws become hot, very tender, and often swollen. Rest, gentle purgatives, light diet, and poulticing, or the application of fullers' earth and lanoline or lard at night, will soon restore the animal.

Rabies is due to a specific virus. The first symptoms of the malady are often not very marked, so that an animal may be suffering from rabies for some time before the disease is suspected. The earliest manifestations are those which characterise many other complaints. The dog is listless, and appears sad ; often he has no appetite ; he seeks darkness, and keeps in his kennel or bed. The special feature which suggests danger is the fixed gaze, the eye being brighter and redder than usual. The dog will often lick everything near him, and may perhaps be seen lapping his urine. If he has maintained his appetite, he loses it later. He does not bark, but whines with a peculiar and characteristic raucous cry. He still obeys his master, but not eagerly, and at times he flies at imaginary objects. It is not the case, as is often said, that he shows terror at the sight of water. On the contrary, he will go to the vessel and try to drink, but, as the disease progresses, deglutition becomes impossible. He bites at his bed, at straw, at wood, at rags which he can get hold of. If chained, he bites at the chain. If not chained, he will try to escape. Even when the disease has gone as far as this, he will seldom bite his master, but if he escapes he may bite any other dog or person whom he may meet. Within eight days, if he be not previously killed, paralysis supervenes, and death relieves him from his agony. There is no known remedy for rabies. If the symptoms we have described are exhibited, the dog should be kept chained in a place by himself, and a veterinary surgeon should be called. If he confirm the suspicion, the sooner the animal is killed the better.

There is a form of rabies known as 'dumb rabies,' in which the dog's jaws appear to be paralysed. This form is very frequent and does not seem to arise so much from paralysis of the jaw, which is kept open, as from swelling of the fauces and back part of the tongue, which makes it difficult to close the mouth. The dog is not, however, dumb, but gives vent to occasional howls quite different in tone from his ordinary voice. His mouth is dark, red, and dry, from evaporation through keeping it open. He cannot bite, but the attendant must beware of supposing that he has a bone in his throat and trying to take it out with the fingers, for the saliva is as poisonous as in the other variety. There is no remedy.

Diabetes occurs in old dogs and soon becomes chronic, ending fatally. The dog's life can be prolonged and temporary relief given by special feeding, nursing, and medicine. Withdraw from the diet all articles containing starch, and give bran or gluten bread, raw flesh and flesh-juice, fish either raw or cooked, fresh or cured, almond-bread and milk in the form of sour milk or buttermilk. The medicines indicated are mild laxatives with small doses of opium, strychnine, cod-liver oil, and alkalies, such as potassium citrate or bicarbonate. If there are symptoms of gastro-intestinal catarrh give liq. potassæ with a bitter, such as tr. nucis vom. or tr. gentianæ.

Phymosis is when the penis cannot get exit. This may be due to natural causes, or to tumours, blows, abscesses, or stricture of prepuce. Every case must be treated according to cause and requirement, and after the cause has been removed, the penis and prepuce should be fomented with lead and opium lotion. Dusting with iodoform, calomel, or boric acid relieves the pain.

Paraphymosis is when the penis cannot be drawn back into the sheath. It often results from paralysis or disease of the penis itself, and from mischievous boys rubbing the penis and causing congestion and often inflammation.

Treatment.—Get it back to place as far as possible, and if necessary keep in place by means of stitches. Cold water or lotions and poultices should be kept on the prepuce, and anodynes and sedatives given internally if the pain is severe.

Piles.—A disease due to some obstruction in the portal circulation, or constipation resulting from confinement either indoors or in a kennel. When first seen there is usually congestion of the mucous membrane round the anus and root of tail, followed by dilatation of the hæmorrhoidal veins, small humours of the same, or piles, protruding. Before treatment, examination of the rectum is essential, as the symptoms may be due to hardened fæces or foreign matter therein, and not to piles. Such obstructions should be removed by manipulation or enemas.

Treatment.—Mild laxatives, soothing fomentations, enemas, astringent and anodyne suppositories, and mild astringent ointments, such as ung. gallæ c. opio, hamamelis and adrenaline. The food should be laxative, and the bowels kept rather on the loose side as long as the trouble lasts.

Aphonia.—Loss of voice is due to an affection of the larynx and paralysis of the vocal cords, generally the result either of a cold or of cancer or tuberculosis of the throat.

Treatment.—First ascertain the cause. If this is cancer or tubercle, excision must be resorted to. If due to an inflammatory affection, poultice, foment, and steam the head, adding a little eucalyptus oil to the water; swab the throat with a mild astringent, and give an electuary of camphor, ammon. chlor., and ext. belladon. Chlorodyne and ipecacuanha-wine are also recommended. If the cause is paralysis, recovery may be assisted by strychnine and eserine, with electricity.

Bronchocele, or **Goitre.**—An enlarged condition of the thyroid gland, often causing difficulty in breathing and swallowing, most seriously affecting pups from a few weeks to a few months old. The disease has to run its course, and too much interference may bring on complications and long illness; but careful attention is required when there is danger of choking.

Treatment.—Foment or poultice, and apply tr. iodi, lin. iodi, lin. camph. co., or ung. cantharidis. Once a day give a pill of potass. iodid. gr. v., hydrarg. iod. rub. gr. ss., graduating the dose according to the size and age of the animal. Also give nourishing food, such as barley-meal porridge, beef-tea, soups, and milk.

Catarrh (coryza or cold) affecting the head is a common and troublesome complaint to which the dog is subject. There is no doubt that it is a form of influenza, and it often accompanies distemper. The complaint is not usually dangerous, nor does it prove fatal in the majority of cases, but may develop seriously if neglected. The affected animal is more or less feverish with or without a discharge from the eyes and nostrils. There is also a certain amount of sneezing, and occasionally a sore throat is contracted.

Treatment.—Give a mild dose of castor oil or glycerin. Keep the dog in a warm and even temperature and hold its head over a basin of hot water containing a teaspoonful of eucalyptus oil to each pint of water. The following mixture should be given in doses of one teaspoonful night and morning:—

Tr. Opii	ʒj.
Tr. Lavand. Co.	ʒj.
Tr. Camph. Co.	ʒiv.
Liq. Ammon. Acet.	ʒij.
Syr. Scillæ ad	℥ij.

If the throat seems to be much inflamed or painful, a poultice of hot sand or salt tied round the neck close up to the head will gradually give relief.

Asthma claims its victims among dogs, especially old or pet dogs overfed with sweets and meat. The most striking symptom is difficulty in breathing. The respiratory movement is done by two apparent efforts, but the inspiration is performed with ease. Respiration is more difficult after feeding, being accompanied by a peculiar cough resembling a grunt. The animal does not thrive, and becomes pot-bellied.

Treatment.—A good sharp purgative should be given, and the bowels kept open for some time. All luxuries must be withdrawn, only good food, such as porridge, being given. If the patient cannot relish such simple food let it do without. A teaspoonful of the following mixture should be given twice daily or when breathing becomes painful and heavy :—

Liq. Arsenicalis	ʒj.
Spt. Æther. Nit.	ʒij.
Spt. Ammon. Arom.	ʒij.
Syr. Scillæ ad	℥ij.

Colic is an ailment to which dogs are subject, although the fact is not generally known, as the animal has all the appearance of being mad—the ignorant immediately pronouncing it as such.

Treatment should begin with a good dose of a purgative, followed by whisky, laudanum, chlorodyne, or other anodyne at hand. Rub the stomach well and apply hot cloths at intervals, or preferably give a good warm bath, rubbing well while in the bath, and dry thoroughly afterwards. Keep the dog warm and dry until purgation ensues. In after-feeding give small pieces of fish, beef-tea, soups, etc., to assist the stomach to recover normal action.

Canine Dentistry.—Many chemists who extract teeth may have overlooked the fact that dog patients also often require surgical aid.

Perhaps some reader has received an early and unfavourable 'impression' of dog's teeth, and the idea of turning them to profit has not entered his head. To such we offer a few remarks as to how to secure the patient with safety and comfort.

Fortunately for canine surgeons the largest dogs have generally the mildest dispositions, and the 'baying of the deep-mouthed hound' is usually the worst part of him. Bites come more frequently from the pampered pet, whose doctor injudiciously approaches him upon his mistress's knee instead of insisting on a stranger holding him. Only those who frequently handle dogs realise that they more often scratch than bite.

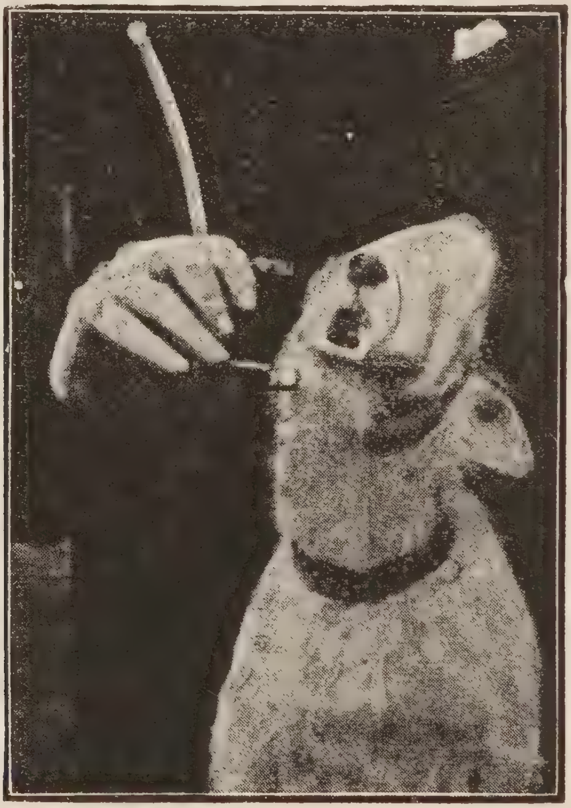

FIG. 39. EXTRACTING A DOG'S TOOTH.

For many dental operations the most favourable position in which to hold the dog is on his side, upon a narrow table, the assistant facing the operator. If the former has firm hold of an ear he may grasp all the four legs with one hand, in the case of a small dog, or another person may be deputed to hold the hind legs. It is not even necessary for the mouth to be free in order to extract or scale teeth, as a clove-hitch does not prevent operation first on one side, then on the other of it, while it controls movement between the jaws. A folded rug should be placed below the dog's face on the side not under operation, as dogs have been occasionally injured for want of this precaution. One can also squeeze the head against it and thus get a steady subject. Large dogs may be cast somewhat in the manner of horses, by securing the legs in soft hobbles. When upon their sides they are controlled with comparative ease, as a man can partly kneel upon them, which he cannot safely do with small animals. Veterinary surgeons who give special attention to canine practice use operating-tables.

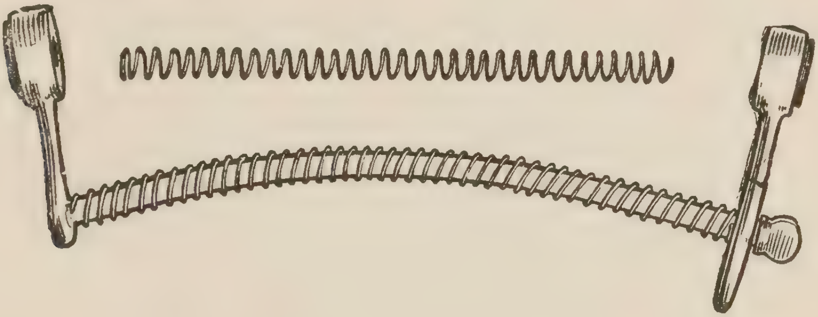

FIG. 40. CLOVE-HITCH.

The method of operating under chloroform is rather dangerous, and the most experienced vets. sometimes snuff out the patient. The subjects to be avoided are fat, old, and petted dogs, which frequently suffer from fatty degeneration of the heart.

Dental troubles seldom begin till the puppy is three or four months old, when he may be subject to fits and other nervous disorders, which are frequently cured immediately by the removal of the temporary teeth, which can be readily distinguished from the permanent; there is usually very little trouble in extracting them, as after the fourth or fifth month the fangs are absorbed.

The most frequent time for fits arising from teething is from the fifth to the seventh month, when the tushes, or long corner teeth, come through; for some reason not understood the temporary and permanent tushes are more often seen together than any other of the dog's teeth, and the primarie should then be removed. Puppies frequently remove them without assistance in that game of 'French and English' they are so fond of playing with one's favourite slippers or the hall mat, if nothing more valuable falls in their way. Large bones should be advised for the same end. Small ones are too often crushed, swallowed, and impacted in some part of the digestive canal.

The dog suffering from toothache rests his face on a cool stone or leans it against a wall and whines, striking the side of his mouth with the hind foot.

There are but few dogs whose old age is not rendered unhappy by chronic *periodontitis*: a disease which is practically preventible if the accumulations of tartar are scaled off once or twice a year. This substance pushes back the gum, exposing the fang, and the disease above named is the certain sequel. It makes the breath objectionable, and the excrescence steadily advances until the teeth finally fall out; but during the whole time the wretched dog never enjoys his food, and becomes morose as the result of habitual suffering. Owners are usually most grateful for attentions to these matters, and many will gladly pay, but do not know that canine dentistry is an existing profession. When long neglected there remains nothing for it but extraction. All the diseased teeth had better come out, when the animal's mouth will recover its original sweetness. Nor can it be said that teeth are necessary for eating. They are more in the nature of weapons of war, or for the pursuit of quarry. Anyone familiar with dogs will agree that the better a dog likes his food the more quickly will he devour it, not masticating meat in the least.

In making these remarks it is not our purpose to ignore the fact that digestion begins or should begin in the mouth, but it is also a fact that the gastric juice of the dog contains twice as much hydrochloric acid as that of ruminants, and the stomach is well able to accommodate itself to the habit of bolting the food whole. We are here only dealing with a choice of evils, and we choose the lesser when we extract all the teeth in preference to leaving many diseased ones. Dogs can live and thrive on soft food very well, without any teeth whatever. The appearance of tartar on the teeth commences usually at about fifteen months, and the dog's age can be fairly well guessed by an expert from this means alone. The same tooth powders can be used as for human beings, and in many chronic cases the use of charcoal biscuits is a benefit alike to the dog and the owner.

Splinters of game and poultry bones are not infrequently found firmly embedded between the teeth, and occasion much distress; the dog strikes the side of his face with his front paw and dribbles at the mouth. A timely removal with the stump forceps and a little astringent wash applied, or rather *champed*, on a sponge will soon effect a complete cure.

Diarrhœa in Cats is due to irregularity of diet, and particularly to eating refuse during nocturnal rambles. Give a mild dose of castor oil with an equal quantity of lime-water. In severe cases a few drops of chlorodyne and brandy will prove efficacious. When the disease has abated feed carefully, and on no account give stale fish or meat.

Dysentery is one of the worst diseases which attack the cat, and is often the forerunner of fits. If taken in time, a teaspoonful of brandy in boiled milk will tend to stop the discharge. Beef-tea and small pieces of roast beef should be given to sustain the system, but the disease is not easily checked.

Fleas, etc.—Unless carefully and regularly attended to, the coats of all domesticated animals are liable to become infested with vermin. When such is the case all bedding should be destroyed if at all practicable, and the kennel or other sleeping compartment cleansed thoroughly with boiling water, afterwards painting with turpentine. The coats of smaller animals may be treated with an application of a mixture of yolk of egg and turpentine, in the proportion of one teaspoonful of turpentine to each yolk of egg. A useful application for all dogs is a mixture of 1 oz. each of fluid extract of quassia and paraffin oil in 18 oz. of methylated spirit. Brush this over the whole coat with a hard brush. As the spirit evaporates it leaves behind quassia and paraffin, which act as poison to the insects and their ova.

TREATMENT OF EYE DISEASES

THERE are diseases of the eye special to some animals, and others common to all. In these days of chemist opticians one feels some diffidence in describing the structure of the eye, a knowledge of which is so essential to anyone attempting its treatment. If any reader is not well up in the anatomy and functions of the human eye, he may be referred to Kirke's 'Physiology,' or Huxley's popular work, to the 'Encyclopædia Britannica,' or to 'The Chemist-Optician,' one of this series of chemists' books. We will, however, suppose that he knows this important subject, and call his attention only to those differences which are found in the eyes of quadrupeds and birds.

The eyes of animals differ only in a few particulars from the human eye, and to these differences we will briefly call attention :—The position in the face (finding its most conspicuous example in the hare, which looks behind her); the lashes and brow; the retractor muscle which enables animals to draw back the eye into its socket, and the greater development of the haw or *caruncula lachrymalis*. The *tapetum lucidum* also, which enables animals to graze in a very low medium of light, and cats to 'see in the dark,' as is commonly said. It is not true that they can really see in the dark, but they can do so in a very low medium of light. An absolutely blind cat can find its way about without running into objects of furniture, etc., but this is chiefly owing to the 'whiskers' or long feelers with which pussy is endowed; at the base of these feelers is a little cauliflower-like expansion of nerve which gives the most delicate sense of touch. Bats have the sense of touch so highly developed that a blinded bat can fly about a room in which silk threads are suspended without ever coming into contact with them. To their highly developed sense of touch and a good bump of locality must be ascribed a great deal of the ability cats possess of 'seeing in the dark.' There is, too, a phosphorescent light or luminous carpet at the back of animals' eyes, particularly felines, which enables them to see much better than we can, in anything but absolute darkness. Savages can see better at night than civilised men, and countrymen, gamekeepers, and rural policemen can see where a city man feels absolutely helpless. These are of course only examples of the fact that senses not fully developed fall into abeyance, or by exercise develop proportionately.

Much of the expression of the face depends on the eye, though it can hardly be said to be the 'window of the soul' as in man. Man does not lay his ears back when angry, but the expression, for instance, of a vicious horse or cat is as much due to the ears as to the eyes. Horses are commonly suspected of vice if much of the white of the eye is visible, but it is not an invariable rule, nor is a deep hollow over the eye an invariable sign of age. It may sometimes be seen in a quite young horse, when one or both of the parents were old. The eye, by its connection with other parts of the system, and its exposed position, along with its own delicate structure, is liable to numerous forms of disease, external and internal. Eye diseases may be referred to two classes—namely, external and constitutional—and they are all more or less of an inflammatory character.

Inflammation of the Eyes (*Ophthalmia*) is not unfrequently caused by the lodgment of foreign bodies, and was more common formerly than now. Hay-racks were then above the horses' heads, and in pulling out the provender, seed would fall on the face and into the eye. Stables were dark, and the atmosphere saturated with ammonia. The blind horses met with thirty or forty years ago were probably more than double the number at the present day.

Inflammation is caused sometimes by the lash of the whip, and may be traced long afterwards by a white mark being left upon the eye.

The first thing to do in treating an inflamed eye is to ascertain if there is anything lodged in it, such as seed, chaff, or grit. Warm fomentations with extractum belladonnæ are of much service in reducing the swelling, but no such preparations as zinci sulph. should be used during the inflammatory stage.

The introduction of cocaine into veterinary practice has been of the greatest benefit in treatment of eye diseases and accidents. A 10 per cent. solution instilled upon the conjunctiva enables the operator to get a fair view and manipulate the lids in order to remove a foreign body or suture a torn eyelid.

Some practitioners bleed from the angular vein or apply a counter-irritant to the skin over that region. We doubt the utility of such treatment, and there is always the risk of the animal rubbing it and causing further injury. Belladonna has the advantage of keeping the pupil moving, and preventing morbid matter from fixing the iris and lens. A dark stable, or a light bandage suspended over the face, is comforting to the patient and should not be forgotten. If the cause has been an injury from a blow with a whip, or a bough in going through a hedge, a mark will generally be left, and then it is, when inflammation has subsided, that zinc sulphate 4 grains to the ounce of water will prove useful in reducing if not altogether removing the nebula, as the more or less opaque spot is called. This will be seen to become blue round the edges, and gradually disappear till only a small blemish, technically known as an albugo, remains. It was the practice in former days to treat opacities of the cornea with caustic remedies, blowing powdered sugar through a quill on to the surface of the eye, and applying solid nitrate of silver, but such heroic remedies have proved to be quite unnecessary, and absorption can be facilitated by no greater excitants than the one above named, or alum 4 grains to the ounce of water.

For the inflammatory stage the late Professor Williams, of Edinburgh, recommended smearing ext. belladonnæ upon the lids, but it is more elegant treatment to paint over them the B.P. solution of atropine sulphate.

Inflammation of the eyes may be of a more serious nature and of constitutional tendency and recurrence. Veterinarians of experience can distinguish between the two and treat the latter with aperients and febrifuges. In this disease the internal structures of the eye are involved and serious alterations follow. Repeated inflammations end in blindness, and too much importance cannot be attached to the examination of the eyes of a horse before making a purchase. If one eye is smaller than the other or looks puckered or three-cornered, there is something wrong. Although experienced veterinarians sometimes fail to detect these things, we think there is no guinea better spent by the amateur horseman than that paid for an examination as to soundness.

Torn Eyelids are generally caused by the reprehensible practice of leaving nails in stable walls, though horses have been known to tear their own eyes by rubbing against rough places. The edges need to be carefully brought together by means of fine sutures, as it is most important that the union should be quite level. Inflammation should be kept down with the soothing lotion before mentioned, and the wound, if possible, dressed with carbolised oil 1 in 40, care being taken to keep the oil from running into the eye.

Painting the sutured edges with equal parts of tinct. benz. co. and glycerin is good treatment. A shade so arranged as not to stick to or press upon the parts should be provided.

In torn eyelids, tongue, ear, vagina, and all such structures, the lacerated part should never be cut off, but brought into apposition by sutures or any convenient method, and adhesion brought about as quickly as possible.

Grape, or **Staphyloma,** is rarely met with as a disease of the eye in horses, but occasionally occurs in cattle and frequently in dogs, especially of the pug and other large- and prominent-eyed varieties, as Japanese toys, Blenheim and King Charles spaniels, etc. It consists of a more or less hard whitish tumour upon the front of the eye, and is often the result of distemper, though it may occur at any time. It must be removed either by the knife or by caustics, the pain of which can be greatly mitigated by previous application of cocaine. There is also a false staphyloma due to new growths like warts. The best plan perhaps is to secure a hold upon the tumour by passing a needle and stout thread through it and cutting off the greater part, finishing the work with several applications of argent. nit. Dogs that have been much reduced by distemper, or debilitated by starvation or other causes, get a form of staphyloma in the centre of which is an ulcer, becoming larger if not treated, until eventually the aqueous humour runs out and blindness results. Ulcers of this kind are not so formidable as might be supposed (we are referring to dogs), and they can generally be rapidly mended by the application of—

Argent. Nit.	gr. iv.
Aq. Dest.	℥j. M.

Large ragged ulcers on the cornea of the dog's eye will heal up and often clear up so well as to leave less blemish than does the flick of a whip upon the eye of the horse. Tonics should be given, and among the best for this purpose may be counted the following :—

Ferri Carb. Sacch.	gr. ij.
Quininæ Sulph.	gr. j.

M. ft. pulv. Quotidie cum cibo.

This is for a terrier or small dog. Twice as much may be given to a spaniel, retriever, or setter ; and three times the quantity to very large dogs, as mastiffs, St. Bernards, Great Danes, etc.

Sand blown into the horse's eyes produces a form of granulations, with continued excessive discharging, forcing the animal afflicted to keep his optic closed. Boric lotion and ung. hyd. ox. flav. (gr. ij. ad ℥j.) prove invaluable.

Where there are further inflamed conditions, such as irritation by bites of flies, hydrarg. perchlor. is useful, cocaine being added if the price warrants it.

Diseases of the Humours of the Eye result from blows, and often end in blindness by reason of lymph being deposited and organised. It is, however, impossible to say in a recent injury what the result will be, as the front chamber may be filled with blood-like matter and yet clear up again in a few weeks. Fomentations and treatment as for inflammation should be adopted and not despaired of while the colour of the contents shows changes. Blindness from concussion also happens, and from the rupture of minute vessels in the posterior chamber, and these cases frequently recover.

The vitreous humour occupying the larger or posterior chamber of the eye undergoes changes in old dogs, becoming less transparent, and this is quite beyond remedy. Its progress is generally slow.

Since the discovery has been made that iodide of potassium may be given for a considerable time without constitutional injury, it is worth while prescribing for these lymph deposits in the deeper structures of the eye. A grain or two daily for several weeks is quite a safe dose to prescribe, and we have seen great benefit accrue.

Cataract is an opacity of the crystalline lens. It may affect the capsule of the lens, the lens itself, or both, and is called respectively capsular, lenticular, and capsulo-lenticular. In domesticated animals its treatment is not attempted. To the lay mind any opacity of the eye is a cataract, and prescribers get the credit of curing it when they have done no more than excite absorption of a cloud on the cornea. A cataract of recent standing is blue in colour ; of old, ivory-white.

A cataract can be distinguished by what is termed the 'catoptric test,' which consists in placing the animal in the dark and passing a lighted candle or match from side to side, a little distance in front of the eye. In the normal eye three images of the light should be seen—two upright, and moving in the same direction as the candle, and the other inverted, and moving in the *opposite* direction. Depending upon the extent of a cataract, one or other of these images will be indistinct or absent.

For *scum or opacity* use—

Argent. Nit.	gr. x.
Aq. Destil.	℥j.

Two drops into affected eye often cures apparently hopeless cases. Calomel may be blown in through a quill, but never use lead acetate.

Nebula is a blue spot on the cornea—a cicatrix the result of conjunctivitis. Treat by applying solution of silver nitrate.

Albugo is a white spot on the cornea which follows nebula, and is treated in a similar manner.

Amaurosis is blindness due to disease of the optic nerve or the retina. As a rule it indicates some brain trouble, and is often brought about by excessive hæmorrhage. There is no cure.

Strabismus, or **Squinting,** in the lower animals is a symptom of some disease, such as parturient apoplexy, lead poisoning, etc.

Ectropia and **Entropia** are eversion and inversion of the eyelids respectively, and must be treated as required.

Trichiasis and **Districhiasis** are the growing out and in of the eyelashes.

Dislocation of the Eyeball caused by a fight or other injury is a ghastly spectacle, but there are not wanting trustworthy records of successful replacement. If it is attempted, no time must be lost, and an antiseptic lotion should be used to wash the injured structures and the operator's fingers. The outer angle of the eyelids should be divided and the globe pushed into place by pressure of the fingers. A compress should then be made of folded lint dressed with a lotion of—

Liq. Plumbi	ʒij.	
Ol. Amygd. Dulc. ad	℥iv.	M.

This accident to the eyeball is not so rare among pugs and other prominent-eyed dogs as one not accustomed to dog practice would imagine.

If the eye is lacerated or it cannot be replaced, it should be removed and the 'aching void' treated with soothing remedies —the lead and oil lotion mentioned is suitable.

Overflow of Tears is a matter upon which veterinarians are sometimes consulted. It is generally due to blocking up or obliteration of the tear duct. The face, whether of horse or dog, soon becomes scalded. If blocked by inflammation or matter, its function may be restored by reducing the inflammatory action and removing mechanical impediments. Many King Charles spaniels and dogs of that class are habitually tear-stained ; their large limpid eyes appear to secrete more tears, and their flattened noses prevent the flow of them into the nose, as compared with other dogs. They are creatures of man's fancy, being bred from parents selected for the shortest faces, besides which it is an open secret that dog-fanciers compress their noses in puppyhood.

If the cause cannot be removed, the face should be dressed with ung. simplex or ung. lanolini. If greasy applications are objected to by the fair owners, a glycerin lotion not stronger than 1 in 20 will prove grateful.

ADDITIONAL MEMORANDA

Wrinkled eyelids are a sign that the eyes have been diseased.

When warts are on the eye, and cannot be got at with the knife or scissors, remove by acetic acid.

Defective vision or disease is a common cause of a horse shying. The eyes should be thoroughly and carefully examined to find out the cause.

It may be mentioned that the eye is bound to be very delicate and sensitive, as it is supplied with six nerves, viz. :

Second, or optic = special sense of sight.
Third, or motoris oculorum = motor to circular fibres of iris.
Fourth, or pathetic = motor to superior oblique muscle.
Fifth, or trifacial = sensory to eye.
Sixth, or abducens = motor to external rectus muscle.
Sympathetic = to radiating fibres of iris.

WOUNDS, SORES, ETC., IN ANIMALS

The Treatment of Wounds is a large subject, and many books have been written upon it, but there are a few simple rules to be observed which are applicable to all animals, including man. It must be admitted that veterinary practitioners have generally a better claim to the title 'surgeon' than have the majority of those who may lawfully use the title. The ever-increasing number of specialists in the medical profession and the facilities for getting operations done at hospitals, have benefited the public, but not the men who call themselves surgeons, and who practise for years without ever venturing on an important operation. How many college surgeons, for example, ever performed such an operation as ovariotomy? Hundreds of country vets. perform it daily, and under the most disadvantageous conditions. The animals on which they operate are generally smaller, and consequently more difficult to deal with. It is true that the human patient is more prone to blood-poisoning and other bad sequelæ than animals whose habits are simpler; but against this may be reckoned the advantage the ordinary surgeon has in the fact that his patient is more amenable to control. The animal doctor has to allow for the chance of his splints and bandages being bitten off, and himself bitten, kicked, or crushed while attempting to help his patient.

The principal varieties of wounds to be dealt with may be classified as incised, punctured, lacerated, and contused; and to these may be added gunshot and poisoned wounds.

Incised Wounds are those in which a clean cut is made with a sharp instrument, dividing the structure evenly without tearing or stretching the tissues—a clean division, in short. The disposition of such a wound to gape open or not will depend upon the direction it takes with regard to the muscular fibres beneath, supposing it to be where muscles are found. This definition, though it applies well enough to men, is scarcely complete in reference to animals. There are many wounds received by horses below the knees and hocks, where no muscles exist, and a small wound may be of vastly more importance than a large one upon a fleshy or muscular part of the body. According to the nature of the structures injured must the treatment be regulated. In the case of an ordinary incised wound in the fleshy parts of the body or limbs, the treatment should be directed to bringing the edges in apposition with the least possible delay, pouring on an antiseptic dressing even before sutures or strapping are ready for application. An immediate dressing of acid. carbolic. ℥j., ol. olivæ ℥xl., has the most agreeable effect in relieving pain, and will frequently cause cuts about the hand of man or the limbs of horses to heal by first intention, or adhesive inflammation as it is called. If the wound be a large one, it will take the 'sting' out, and make the animal more amenable.

Plaster does not answer very well with animals, on account of their hairy surfaces and the ease with which they can bite or lick it off. One or more sutures need to be put in to secure a wound of any size ; these should not be drawn too tight, as there is always swelling afterwards, and the stitches may be torn out. In wounds of sufficient magnitude to require stitches, a certain amount of discharge may be looked for, and the lower end should not be brought together quite so closely as the remainder, so as to allow of a drain. It is a very important consideration to allow of drainage, as pocket wounds sometimes form sinuses or pipes, and need prolonged treatment.

It is sometimes necessary in **punctured wounds** to enlarge the orifice, always in a downward direction, in order to allow of free drainage. Splinters and other foreign bodies are more apt to be present in wounds of this class than in simple incised or even lacerated wounds. Splinters of wood, iron, etc., sometimes remain in the flesh for a long time, and small ones especially find their way out in the most unexpected places, nails, wire, and needles making the most extraordinary travels.

Tetanus, or lockjaw as it is more commonly called, follows more frequently upon punctured wounds than others. The magnitude of the wound is no measure of the tendency to tetanus. It more often results from a prick in shoeing than from a great wound inflicted by machinery or collision. An explanation is found in a specific bacillus being the cause of tetanus. The hands and feet are more in contact with the soil or substances in which the organism is found. Perfect asepsis renders its invasion impossible, and it is now quite rare in hospital practice, where formerly it was most dreaded.

Bites of Flies.—Liniment of iodine is used in Australia for the bites of flies on sore surfaces. In sores which are exposed the flies cause much annoyance, and boric acid with iodoform keeps off the pest fairly well, but an 'absolute fly-guard' is needed. In the country where the area is fenced with barbed wire, animals are continually getting cut. Here, again, the pestilential fly strikes home, and immediate antiseptic treatment is needed. Lotio acid. carbolici (with glycerin) is satisfactory, but care must be taken to keep the wound covered, for it may soon become 'blown,' swelling to an enormous size, and the animal rapidly developing blood-poisoning. In this stage quinine or aconite may be given internally.

Lacerated Wounds may be of any shape and size, but differ from the former varieties in the skin being torn and ragged, and often the deeper structures besides. To bring the injured parts into apposition is the object to be aimed at, whether by sutures, bandages, plaster, or other contrivance. To the inexperienced surgeon the bleeding is a difficulty, but it is very rarely dangerous even when large vessels are divided, for either the animal will have bled to death before his services can be obtained, or the vessels will have plugged themselves.

If an artery can be seen spurting bright red blood, it should be secured by a ligature, and the ends left long to hang out of the wound for removal on a subsequent occasion. Liq. ferri perchlor. and other styptics may be used, but hæmorrhage may generally be easily enough arrested by pressure, according to the situation of the wound. The operator must keep cool, and consider where and how the pressure should be applied. It should be recollected that there is a natural tendency or effort on the part of nature in the rapid formation of clots; vessels may be seen sometimes with clots a foot long hanging down like a rough cord, and effectually plugging the cut end. Unless a foreign body is suspected to be present in a wound, it is generally best to bind it up in the blood immediately, and not to foment or remove clots unless it is very thoroughly done with modern antiseptics.

The loss of a large vessel even may soon be compensated by the additional work undertaken by others—as, for instance, when a jugular vein is rendered impervious by inflammatory action, the circulation in the head is carried on as well, or nearly so, as before the accident.

The different domestic animals vary very considerably in their power of recovering from wounds. Horses are perhaps the most liable to tetanus and dogs the least, horned stock coming between them.

Wounds in dogs heal more often by simple adhesion than is the case with any other animal. Such severe operations as ovariotomy, necessitating a division of the flank and the introduction of the finger into the abdomen, will often heal without the formation of matter.

The various modes of healing are as follow :—

1. Immediate union—that is, healing without any exudate.
2. Primary adhesion, or healing by an exudate and glazing.
3. Granulation, which is associated with suppuration more or less: it is a prolonged mode, and there is always the danger of septicæmia or pyæmia.
4. Secondary granulations. This is when there is a deep cavity in the wound, the two granulating surfaces being brought together and kept in position by means of sutures.

5. Mucus or scab. This is a form of granulation without suppuration. It is the natural way of healing in the lower animals.

The after-treatment of wounds needs some experience, but the chief aim should be to excite healthy granulations. The efforts of nature to repair wounds sometimes require stimulating and at others repressing; hence it is the duty of the surgeon where a wound is pale in colour, with a thin reddish or frothy matter, to stimulate with ung. resinæ or ol. tereb. rub. ℥j., ol. sesami ℥iij., applying daily till red healthy granulations begin to show, and thicker, yellower matter to appear. Bruises or contusions are relieved by—

Cretæ Præparat.	℔j.
Resinæ	℥ij.
Acid. Carbolic. Pur.	ʒiv. M.

Apply to the parts frequently.

Cuts and wounds may be treated with the following ointment:—

Venice Turpentine	4 oz.
Lard (or Vaseline)	4 oz.
Oil of Turpentine	1 oz.

Melt together and add—

Acetate of Copper	1 oz.

Stir till cool. Apply with a feather or brush daily.

'Proud flesh,' as it is called, is but the too rapid or excessive production of granulations, and a large wound may at first require remedies to produce them, and, later on, others to keep them in check; for the latter purpose nothing can compare with zinci chlorid. or cupri sulph. For small surfaces argent. nit. answers well enough, and forms a dry scab which may be picked off roughly from time to time, thereby bringing the edges of the skin together, and leaving less blemish than if left to nature, even supposing the granulations did not grow out, and form a soft, painful surface, bleeding upon the least touch. (*See* Broken Knees, p. 43.)

The principles of treatment of a wound may be summed up as follows:—(1) Arrest hæmorrhage; (2) remove foreign bodies and dress antiseptically; (3) bring the edges into apposition; (4) again apply an antiseptic dressing.

Professor Pritchard and others have called attention to the fact that, where sutures are retained for a day or two, the wound will eventually heal opposite the marks made by the needle, no matter how long the process of union may take.

The following after-effects or sequelæ of wounds deserve observation:—

Erysipelas is a form of septicæmia. It can also be induced without a wound, owing to the fact that when anything lowers the vitality of a part or structure, that structure will give a ready access to septic germs, thus inducing septicæmia. There are two kinds in the lower animals—œdematous and phlegmonous. It has a great tendency to spread, and to sloughing of the parts contiguous to the wound. It occurs within a few days after the injury; there is intense heat, swelling, and a smooth and shining appearance of the skin, and if touched the skin leaves an indent; if in a limb, lameness may present itself. A valuable application for allaying the heat and pain consists of pure carbolic acid 1, spirit of camphor 6, and alcohol 10; apply once daily in mild forms, and twice or thrice a day in severe attacks. In all cases keep the bowels open, thoroughly cleanse and disinfect the wound, poultice or foment with soothing poultices or liniments, such as belladonna. Internally tr. ferri perchlor., and if fever be very high and pain excruciating, tr. aconit., spt. ætheris nitrosi, and quinine. The quinine not only acts as a tonic, but has great antiseptic and febrifugal properties. See that the ventilation and surroundings of the animal are satisfactory. Vaccines and serums are also used with advantage.

Tetanus is a spasm of the voluntary muscle, which is of an indefinite duration and may be classed as idiopathic, and traumatic or exopathic. It is named according to the part affected—

Trismus, when muscles of mastication are affected.
Opisthotonos, when superior cervical and dorsal muscles are affected.
Pleurosthotonos, when muscles of one side are affected.
Emprosthotonos, when inferior cervical muscles are affected.

The most common in the lower animals is trismus with opisthotonos. The horse is the most susceptible in the lower animals. Like erysipelas it does not always proceed from an extensive injury, as it is as common from a slight scratch as from a wound several inches in extent. It was in former times very common after docking or castration, and from injuries of the hind feet, but now it is rarely seen at all, and when found it is of the idiopathic form, thanks to the antiseptic treatment of wounds and study of bacteriology. The symptoms are: head back, stiffness of neck and whole of body, limbs far apart, *membrana nictitans* protruded, eye smaller than usual, squinting, dripping of saliva, elevation of the tail. The mouth in general can be opened to a certain extent, there is constipation and inability to urinate, fæces hard, due to loss of peristaltic action and the increased absorption of the fluids to remedy the large breakdown of tissue. If a case slowly develops, the prognosis is more favourable than if quickly. As the disease advances, the process of deglutition becomes more and more impaired and the pain is excruciating.

Treatment.—Hypodermic injections of antitetanus serum, dark and quiet loose-box, slings if considered necessary, mild laxatives, electuaries of ext. belladonnæ. If traumatic, anoint the part with belladonna poultices, and if due to docking another piece taken off the tail does good. Milk, gruel, eggs, linseed tea, etc., should be kept before the animal, as it will absorb more or less to keep up the strength, even although the jaws are locked. Wounds of all kinds should be dusted with antitetanus powder or the serum should be injected. This is highly important, as it reduces to a minimum the chances of lockjaw. If due to a wound tetanus is generally seen when the wound is about healed. It is also peculiar to some districts.

Abscesses sometimes result from wounds, but more frequently from severe bruises. They may be briefly described as of two kinds, serous and phlegmonous.

Serous abscesses occur in all domesticated animals, but most frequently in the dog and cat, as the result of injuries received in combat. They occur, too, in those parts where both dogs and cats usually grapple one another—namely, on the throat, ears, and face. Their formation is very rapid, producing great swelling and much inconvenience, but nothing like the pain caused by abscesses containing pus. The inner surface of the ear is frequently the seat of serous abscess, and must then be very painful. It is perfectly useless to attempt any treatment until the knife has been freely used. The abscess must be boldly slit up, and the fluid, which is of a reddish-yellow colour, evacuated. Nor is this all that is necessary, for it will be found as full as ever again next day, and the lips of the wound sealed up, unless some remedy has been applied to destroy the serous sac or lining membrane of the abscess which secretes the fluid. A seton dressed with some irritant, such as ol. tereb., or hyd. bichlor. gr. v., spt. vini ʒj., does well in some cases. The ends of the tape or string composing the seton should be knotted, and not tied together, as both dogs and cats have a knack of striking the ear and face with the hind leg, and if the foot hangs up in a tied seton it causes great and unnecessary pain, and perhaps irreparable injury. With horses and cattle there is not the same danger. When pus begins to form, the seton may be removed, and nothing more is needed than a little healing ointment, such as ung. resinæ et cetacei or ung. zinci ox. ℥j. c. acid. carbolic. ♏x.

Phlegmonous or pus abscess is more painful, and usually longer in forming than the serous, though arising from much the same causes. It must not be lanced until ripe, but the process may be hastened by hot fomentation or the application of lin. camph. co. or other warm embrocation. If left alone abscesses usually (though not always) 'point'—that is to say, one part becomes more prominent, and when felt is found to be much thinner, eventually breaking upon some motion of the patient or blow from one of its kind. The surgeon may save the animal a good deal of suffering, by boldly lancing at the 'point' or thinnest part, and squeezing out the matter, which is often very thick, and sometimes granular if long neglected. A pledget of tow dipped in ol. tereb. rub. or lin. alb. or ung. resinæ, will facilitate the process of evacuation, or if the situation is convenient, and the patient under control, an injection of either of the fluid remedies suggested, by means of a metal syringe,* will answer better still. Antistreptococcic serum is now the recognised cure for pus abscess.

Ulcers occupy so considerable a space in old works on the healing art that it may be assumed that they were more common than now—famine and dirt have always contributed to the production of ulcers, and from these causes they are still to be found more frequently among savage races than in civilised communities.

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* We are aware of the chemical objection to using a metal syringe with mercuric chloride, but think the destruction of a fourpenny syringe the lesser evil. Glass syringes are liable to have the nozzles broken by the sudden movements of the patient. A vulcanite one may, of course, be used.

Ulcers among domesticated animals in the British Islands are not of frequent occurrence, if we except the specific ulcers of certain affections, as glanders and foot-and-mouth disease, or loss of structure following upon injuries such as sinus-ulcers—quittor, poll-evil, fistulous withers, etc.; but of ulcers breaking out upon the body as a blood-disease we do not see many examples in these times of better stabling and sanitation. Where, however, an animal shows a disposition to form ulcers without any external or exciting cause, it may be fairly assumed that the blood wants 'mending or sweetening' as some old works state it. Alteratives and tonics, such as are prescribed elsewhere in this work, mineral tonics especially, and good diet are to be recommended. Ulcers may be classified as weak, indolent, inflamed, gangrenous, etc., but they all need treating with severity, hence the black oils and 'sublimate' treatment that is the practical result of the experience of ages. No doubt a careful distinction between the ulcers is an advantage to doctor and patient, but the chief thing to be aimed at is to destroy the unhealthy sore, and produce in its place a healthy wound which will heal up by the ordinary process of granulation. This may be done by the hot iron, or dusting it over with mercuric chloride, or burnt alum with various proportions of flour, or zinc oxide or carbonate with starch, or applying copper sulphate (or acetate), or zinc sulphate (or chloride) lotion. Each and all of these have proved effectual, besides a score of other remedies which might be named, but we most strongly recommend alum. exsicc. When applied for such a purpose this article should be rubbed quite smooth, and may be disguised by preparing it *secundum artem* with pulv. bol. armen. vel p. curcumæ vel carbo animalis (wood charcoal is inconveniently light).

If a liquid application is preferred, alum 1 in 20, or saturated solution of copper sulphate, or hyd. bichlor. gr. x. to ℥j. of spirit, may be prescribed. Washing ulcers clean with warm water and soap, and dusting on the dry powders above suggested, is, however, we consider, preferable. Pressure is also helpful, especially if the situation lends itself to such treatment by bandaging.

Ulcers in the mouth, upon the tongue, and about the muzzle are frequent in cattle and sheep as a result of foot-and-mouth disease, Aphtha, etc., which *see*.

For all kinds of ulcers alum is a specific. The most rapid and, to those who have not tried it, the most surprising results follow the sponging of the ulcers with an aqueous solution of alum. Two or three days will often suffice completely to heal large ragged surfaces inside the mouth ; but the process is not so rapid outside, as it is not assisted by the saliva, and is more or less checked by contact with foreign bodies and exposure to the atmosphere.

Ulcers of the hind legs occur in round-legged, coarse-bred animals with a tendency to farcy, and should be treated with the following lotion :—

Aluminis Exsiccat.	ʒij.	
Cupri Sulphatis	ʒij.	
Aquam ad	℥xx.	M.

For internal remedies, *see* Water-Farcy, p. 139.

Sinus-Ulcers, or **Fistulæ,** are of much importance to the veterinarian. They may and do occur in all sorts of places, but we can here only consider a few of the more important, as quittor, poll-evil, and fistulous wither.

Quittor is a sinus-ulcer having its orifice between hair and hoof, usually on the inside quarter of the horse's foot. It may arise from a neglected prick or festered corn, or tread from the opposite foot. The orifice may be very small, and the owner think lightly of it ; but he will soon find, to his cost, that another pipe or sinus has formed in front of the old one, and the veterinary surgeon when called in may find that branches have already begun to grow. Pipes running in all directions are found in the foot when an incurable case is dissected. The treatment aims at destroying these pipes. The more anterior it is, the more dangerous is it to the animal's life, as it may cause open joint.

In a few mild instances the exit of the matter is followed by speedy recovery, but in the majority of cases the opening shows no tendency to heal, the discharge continues, and the pain and lameness remain. This is due to one of two causes: either there is some dead portion of tissue lodged in the part, as a piece of decaying bone or fascia, or else the wall of the sinus has become so thick and hard as to resist the ordinary reparative power of nature.

Whichever of these be the case, the part, if not interfered with, would be a considerable time before it resumed its normal condition. In case of the lodgment of a piece of dead bone, nature would doubtless, in time, remove it by the constant suppuration; but time and suffering are both saved by interference. Both of the perpetuating causes may frequently be removed by the same means—viz., setting up such an amount of inflammation as shall destroy the callous lining membrane and thoroughly detach any portion of dead tissue, which would then be removed in the discharge, and a healthy granulating surface left. To this end numerous means are employed. Blisters and firing, or even incision, are resorted to, but the two latter require a qualified professional man. Blisters are of little use, save in conjunction with caustic injections. The old farriers used corrosive sublimate in powder. It was placed in a small hollow cylinder of paper, and pushed into the sinus. This method is very good when only one passage exists, but too often the sinus has three or four collateral branches, in which the plug of caustic would not produce its effects. The sublimate is a valuable agent, but it should be used in solution and forcibly injected by means of a syringe, so as to come in contact with the whole of the sinus.

A good form of injection is—

Hydrargyri Perchloridi . . .	ʒj.	
Acidi Hydrochlorici	♏ x.	
Spiritus	℥j.	Solve.

This solution may be used once a day for two days, and then either diluted to half the strength or used once every three days. If there is still much pain after a fortnight of this treatment, apply a smart blister. Solutions of the sulphates of zinc, iron, and copper are sometimes used, or a mixture of all three under the name of *Vallate's Solution*, which has proved successful sometimes where all other agents have failed. The general health must not be neglected. An occasional dose of physic is useful, and at the outset a dose or two of opium or belladonna extract or solution of cocaine to allay the great pain. A Canadian practitioner, who has acquired a great reputation for curing fistulous withers, has stated that his success is due to the introduction of biniodide of mercury into the sinuses, made up just as one would a blister for external use, and the strength advised is 1 in 6—which is very strong for the skin and no doubt wakes up the sinus. A slough follows upon great tissue excitement and, doubtless, much pain.

The old school of practitioners were certainly very successful in the treatment of quittor and poll-evil, and had a great deal more practice with the latter than we have, since stables are not now built low and dark, and blows on the head, accidental or otherwise, are not so frequently received.

The old method was to secure the animal with a twitch or by holding up the opposite foot, or in some cases casting the animal with ropes and then ascertaining the direction of the 'pipes' by means of a probe; this done, the 'sublimate' would be rolled in thin paper, and pushed down as far as it would go. Some practitioners poultice, enveloping the whole foot for several days, during which the animal will manifest much pain until a slough or 'core' comes out. Then, if the sinus were truly 'bottomed,' a healthy discharge of pus would follow, and the wound would eventually heal. Too often, however, there is permanent injury to the coronary band, and a false quarter or sand-crack is the result.

A quittor then is always a very serious matter, and often ends in sending for the knacker, after a great deal of expense and trouble has been incurred.

One celebrated man effected a great many cures in cases that had been regarded as hopeless by using fused zinc chloride. His plan was to push the stick of zinc chloride in and out of the sinus nearly every day, and the chloride being easily liquefied would gravitate into the branched sinuses—he also had the sole, crust, bars. and all cut down to the quick, and poulticed for a few days.

The modern treatment is to explore the sinus with probes and lay the pipes open by means of a bistoury and director, injecting some caustic solution if necessary with a syringe made on purpose, and having two eyes or finger-holes on the barrel so as to enable the operator to do it with one hand. Carbolic acid has been used successfully, and other agents have effected the destruction of the sinuses, which, as we remarked at the opening of the chapter, is the object of whatever system of treatment is adopted.

In all cases of quittor the shoe should first be removed, and if arising from a corn or prick this should be well pared out, and drainage obtained from below.

Poll-Evil is a sinus, or more frequently a number of sinuses, situated in that part of the horse called the poll—the back of the head or top of the neck. It is caused by wearing tight bearing-reins, and also by blows or other injuries, and was much more frequently met with in times past, when stables were low and dark. Now it is almost confined to mines and underground works. The treatment required is the same as for quittor (as explained in the preceding section)—namely, the destruction of the sinuses and the production of a healthy wound in the place of the destructive pipes or sinuses. In some respects poll-evil is more easily treated than quittor, inasmuch as a seton can be put through the part, and a dependent orifice thereby obtained. The same agents are used as for quittor, and, despite warnings about destroying the ligament (nuchæ) which supports the head, and the danger of coming down on the spinal cord between the first two bones of the neck, generally prove successful. Injections of zinci chlor., cupri sulph., etc., often answer well enough, but for a case of any standing we advise a coarse seton dressed with zinci chlor. at first, and afterwards with ol. terebinth. When once the sinus is destroyed the wound becomes healthy, and heals up with the ordinary treatment accorded to granulating wounds. (*See* Wounds.)

Fistula.—Fistulous wither is another variety of piped wound, and is caused by hard saddle-trees or harness pinching and crushing the wither. It never occurs in a well-managed stable, as it is simply a matter of looking after the saddles and seeing that they are properly stuffed or renewed from time to time. When fistula is once established the pipe must be traced with a probe, slit open with a knife, or destroyed by a seton, taking care to bring out the lower end of the tape as low down as possible, so as to obtain a good drain from the wound. All this may be prevented if, upon discovery that the withers are wrung, and the 'galled jade' winces at the prospect of saddling, a good fomentation of hot water with an ounce of glycerin to the quart be used, and finally an evaporating lotion as—

Ammon. Chloridi	℥j.
Acid. Acetic.	℥ss.
Tinct. Arnicæ	℥j.
Aq. ad	℥XL.

M. ft. lotio.

To be applied two or three times a day, allowing the parts to dry without clothing.

In Australia opinions are divided about the knife treatment above described. Chloride of zinc, arsenic, hydrarg. perchlor., and other caustic agents are employed by bush horse-owners. When a fistula is first noticed, hot fomentations are applied to absorb it. Failing this they blister with James's or Stevens' blister, and when sufficiently ripe, open it at its lowest point so as to cause drainage. If the wound is a large one and has been slit upon the surface, it is well washed out with carbolic lotion and packed with ashes obtained by burning corn cobs on a shovel till reduced to ashes. This is renewed each day Finally the core comes away in a lump. Although a cure, it frequently leaves an indent in the neck.

Saddle and Collar Galls are frequently produced by sudden chills in taking off saddles and collars while the horse is hot ; good grooms unbuckle and ease them while they are attending to other matters, and so allow the parts to cool slowly.

Bad-fitting collars, especially if too large, are a frequent cause of galls, and useful horses are incapacitated for work by wounds no larger than a sixpence. This is galling both to the animal and the owner, and a lotion that will quickly mend it is in demand. There is a lotion much used by carters, and with some measure of success, which we can hardly recommend here. It is always of the right temperature for application, and has a varying amount of saline material in it, depending a good deal upon the drinking habits of the carter. We should recommend, as a well-proved remedy, the following :—

Acid. Sulph.	ʒj.
Alum. Sulph.	ʒij.
Cupri Sulph.	ʒij.
Potass. Nitrat.	ʒj.
Aquam ad	Oiij.

M. ft. lotio. Shake before applying.

Frequently applied and allowed to dry on, this lotion has the effect of quickly drying up a sore shoulder or saddle-gall, and appears to harden and thicken the skin to resist future rubs. The practitioner should, if possible, examine the collars, pads, etc., to see if they will discredit his medicaments by producing fresh galls as soon as the patient is put to work. Glycerin of tannin, made by dissolving 1 oz. tannic acid in 8 oz. glycerin, is also good for saddle galls.

Plumbic acetate is a time-honoured and helpful agent, but we recommend the above to the counter prescriber for more reasons than one.

Sitfasts are irregular-shaped pieces of skin in the process of separation from the body, and may be likened to hard corns on the human hand or foot. They become thickened and insensible in the middle, and press upon the surrounding soft tissues like a foreign body. They are caused by the repeated bruising of badly fitting harness, and are most frequently found on the withers and under the collar. Their presence causes a great deal of pain, and recovery is impossible while the cause remains. Poulticing and fomentation facilitate the separation of the slough or dead skin, and where poultices cannot be applied an ointment such as the following will answer best :—

Fullers' earth	ʒij.
Glycerin	℥j.
Lanoline	℥j.
Vaseline	℥j.

Make an ointment.

The whole sore should be enveloped in this ointment, which has the effect of promoting disintegration of the dead tissue while keeping soft and healthy the surrounding wound. Some of the old authors—Percivall, for instance—advised repeated mild blisters, but the late Professor Williams, in his 'Veterinary Surgery,' recommended the knife in preference. Sitfasts, as the name implies, do, indeed, *sit fast*, and something more than a powerful thumb-nail is needed to remove them in many cases. We know a specialist who pulls them out with his teeth, at the rate of one shilling each! Once removed, the treatment needed is that usually accorded to granulating wounds. (*See* Wounds, p. 327.)

Sore Shoulders, etc.—Badly fitting harness frequently causes sores on the skin, the shoulders and back suffering most. Such injuries vary from mere loss of hair to deep angry wounds; but something between these two extremes is what advice is generally sought for. Should the skin be not broken, but present a tender surface, a good application can be obtained by heating together an ounce of glycerin and two drachms of fullers' earth; to be smeared on cold. A simple skin wound will yield readily to salt and water, which may be increased in apparent value if coloured with tinct. lavandulæ. But sores caused by harness are too frequently of a more serious character. Careless horsekeepers neglect a slight wound, and, the irritation being kept up, a deep circular sore is the result, the margins of which become callous and the centre covered by a hard scab, under which is always more or less matter. Such a wound, commonly called from the centre scab a sitfast, is most obstinate, showing little tendency to heal unaided. No half-measures are of use; the scab must be removed, and the whole sore dressed with some caustic, as nitrate of silver or even corrosive sublimate (the first in stick, the latter dissolved in spirit of wine, ʒj. to the ounce). A very bad case is radically cured by an incision right through it, so as to alter the circular to an elliptical wound, at the same time starting healthy granulations.

It is common amongst heavy horses to see on the inside of saddles or collars the padding roughly cut out over a wound with a view to prevent pressure upon it. This certainly spoils the harness, and very seldom answers, as the padding protrudes and keeps irritating the wound. The neatest, most effectual and economical method of relieving any sore from pressure, is to apply pads to the harness so that one rests above the sore and one below it. The pads may be made of chamois leather and stuffed with curled horsehair. Common-sense will point out that a pad must not be so applied to a collar as to press on the jugular vein.

Open Joints.—A special difficulty in treating these cases is to check the flow of joint oil or synovia. To do this it is first of all necessary to fix the joint by plaster of Paris bandage or splints, so as to prevent movement. Some joints, as the fetlock, etc., are easily fixed by a bandage; larger joints, as the knee and hock, usually need some contrivance, as an iron bar or piece of wood, put on to the leg like a splint. A piece of zinc spouting well padded and rounded at the ends is very suitable. The higher joints cannot be fixed in this manner, but if the lower ones be fixed, motion is always more or less limited in the one immediately above.

In the case of the stifle joint, from the anatomical arrangement of certain tendons, movement cannot take place if the hock be fixed. The jaw-joint is a very awkward one to fix, as by doing so mastication is stopped ; but this must be done for a time, and motion must be limited till recovery ensues. A tight nose-band effectually does this. By some, blisters are applied round the opening and over the joint ; they act very well—they increase the granulating process and keep the joint still.

In all such cases, however, it is an advantage to coagulate the discharge. This discharge is albuminous, so that there are a number of substances to use. A common one is alum ; not by itself, but as an ingredient of what is called *Open-joint Powder*, made thus :—

Aluminis	℥j.	
Ferri Sulphatis	℥j.	
Pulv. Myrrhæ	℥j.	M.

Directions : To be sprinkled on the part.

The objection to this is that albumen is redissolved by alum in excess. The best and neatest applications are nitrate of silver in the solid form, corrosive sublimate (ʒj. in ℥j. S.V.R.) applied with a feather, and Burnett's fluid 1 oz. to 20 oz. of water for coagulating, or paint with oil of cloves. Do not wash, but let the dirt remain on if not too much. A good cantharides blister over the wound and around the contiguous parts is very effectual. On no account be too hurried in exercising the animal, as the wound is apt to burst again. The up-to-date treatment consists in shaving or clipping all hair from the area surrounding the wound and thoroughly cleansing the skin and wound with antiseptic solution, then injecting the wound with Lugol's solution containing 20 per cent. of glycerin—*i.e.*, iodine ℥ss., potassium iodide ʒj., glycerin ℥iss., distilled water to ℥vj.

'Grease' in Horses.—This expressive name is given to a skin disease affecting the legs. Heavy cart-horses are most subject to it. The hind legs seem more prone to become 'greasy' than the fore. Grease varies in degree, from a small spot covered with short broken hairs, representing merely a wet surface, to a state in which the leg up to near the hock is covered with red, painful granulations and a stinking discharge. The treatment of this disease is generally tedious, and often unsuccessful; this is probably owing to neglect in dressing as much as to the natural obstinacy of the affection. The restiveness of the animal, coupled with the offensive smell arising from a greasy leg, renders the duty of dressing so disagreeable as to ensure neglect by all but the most patient of men. A dressing should be astringent, caustic, and disinfectant. These qualities are combined in the following:—

I.		II.	
Ferri Sulphatis .	℥xvj.	Cupri Sulph . . .	ʒvj.
Zinci Sulphatis .	℥xvj.	Zinci Sulph. . .	ʒvj.
Cupri Sulphatis .	℥xvj. M.	Theriacæ . . .	℥ij.
Dissolve in a gallon of boiling water and add Carbolic Acid ℥iv.		Aquæ	℥xxiv. M.

The sulphates of copper and zinc are also given internally in drachm doses, their action upon the lymphatics of the leg being unquestionable. Arsenic with copper sulphate is also recommended, as well as a solution of corrosive sublimate for occasional external application. In the case of white-legged horses a pound of commercial sulphate of zinc in two gallons of water may be prescribed, as staining with cupric sulphate is a bad advertisement for the owner of the horse. The large soft grapes can be dealt with by dressings of stick chloride of zinc, or a saturated solution of it in spirit. Where there is much swelling of the limb an occasional aloetic ball is advised. In very bad cases resort must be had to the actual cautery, and nothing does better than the time-honoured blacksmith's shovel, heated almost to whiteness. The hotter it is, the quicker will the work be done, and the less pain given. Persons who have not seen living tissues burned will be surprised at the difficulty there is in destroying them.

Fractures may occur by direct violence, indirect violence, and inordinate muscular contraction, or they may be spontaneous, due to diseased bone. They are classed as 'simple' when the bone is only snapped in two, 'comminuted' when it is splintered, and 'compound' if a wound of the skin accompanies and communicates with the fracture. The bones most frequently broken are the long bones of the limbs. Fractures of ribs or skull are dangerous from the chance of injury to organs within, and should only be treated by an expert. We therefore confine our remarks to more simple cases.

Detection of a fracture below the knee or hock is an easy matter by the obvious deformity ; above this, however, where the bone is well covered with flesh, a careful examination is often necessary.

The symptoms of fracture, in addition to pain and lameness, with sometimes swelling and displacement, are twitching of the muscles and crepitus—*i.e.*, a grating sound heard on moving the bone so as to bring the broken ends into contact. The twitching of the muscles is due to irritation caused by the broken ends. A fracture may be mistaken for dislocation, and *vice versâ.* It may therefore be remembered that ordinary extension will reduce a fracture to its proper position, while considerable force is required to reduce a dislocation, and when reduced it remains fixed. A fracture, say of the arm of a dog, is accompanied by swelling, due to blood effused at the part from lacerated vessels. This is rapidly absorbed, and in its place we find organisable lymph, which gradually becomes condensed. This material not only surrounds the fracture, but is found between the ends of the bone.

This change takes place in about a week. Then we have bony deposit between and around the ends of the bone, which in time replaces all the plastic material first formed, acting like a ferule to the part. This bony ring in surgery is known as the *Provisional Callus*, in contradistinction to the *Definitive Callus—i.e.*, the portion between the ends of the bone. These are not separate, but continuous ; the difference is that the superfluous encircling mass becomes absorbed, while the intermediate portion remains as the union. Really, however, this also changes—for at first it is a solid compact mass, but in time, by absorption, assumes the form and structure of the original bone.

The treatment of fracture, then, consists of two parts—setting and retaining the ends of the bone. Correct adaptation is necessary, as Nature attempts repair in whatever position the parts are kept, and so might perpetuate deformity. Success is shown by the outline of the limb and by the grating together of the ends of the bone. To retain them in position in the best manner is done by applying such an apparatus as will take the form of the parts and prevent movement without injuring any of the tissues. We may use either 'splints,' as thin pieces of wood, cardboard, or guttapercha, or, better than either perhaps, a long bandage saturated with glue or starch, to give it the requisite firmness. If the bandage be strengthened with glue, this should be melted with a little glycerin instead of water. It is thus made softer and tougher. Bandages of stucco or plaster of Paris are often used.

Do not apply the starched bandage directly to the limb. First roll a dry bandage carefully round, beginning at the toes, and applying it as high on the limb as possible. The joint above and below a fracture should always be fixed if practicable, as movement is thereby reduced to a minimum. A bandage should never be applied to a limb so as to leave a distal portion uncovered, for the compression above is certain to cause swelling below and, if continued, congestion or even gangrene. No matter what part of a limb is fractured, if a bandage be applied, commence at the toes, so as to have a uniform pressure. Over the dry bandage apply the starched or glued one. Secure the ends, and keep the animal in a small cage, so as to limit his movements.

This apparatus should remain on for about fourteen days, and be examined daily to see it is not loose or too tight. A compound fracture had better be treated with splints and a simple bandage, so fitted as to allow the wound to be examined without removing the whole arrangement.

A comminuted fracture may be treated like a simple one; but if also compound, and any pieces of bone are quite detached, they should be removed.

In fractures of such bones as the thigh, where we cannot apply a bandage, we can fix the hock and stifle joints, and so prevent a good deal of movement. A plaster over the part will also aid if the hair be previously cut short, otherwise it only causes annoyance. These fractures only pay for treatment in pet dogs or bitches, as frequently a false joint saves the animal's life, but renders him lame for life. These remarks specially refer to dogs, but are equally applicable to other animals. The bones of the lower animals unite with great rapidity; but the money value is generally the standard by which the advisability of treatment is judged. Those kept for stud purposes are generally worth a trial; those for the butcher never.

The ribs are not as a rule easily broken, owing to their elasticity and their insertion into cartilages. Treatment is to wind a sheet firmly round the animal.

In treating accidents to the dorsal or lumbar vertebra, on no account place the animal in slings: should partial luxation be present, such procedure will produce complete dislocation. In fracture of the dorsal vertebra there is not always immediate displacement as in the lumbar region, hence there is not immediate paralysis of the hind quarters.

Accidents to the carpus or knee are very numerous, and may be described as follows: (1) Abrasion of skin, in which case remove all dirt with tepid water, tie up head, and apply astringent lotions, zinc sulphate, etc. (2) Skin cut: this always leaves a blemish. Treat as in abrasions, and keep joint fixed. It is often advisable to put into slings. (3) Where bursa of tendon is punctured, but does not open the joint, put in slings, apply splints, use cooling and astringent lotions, with tinct. opii to soothe the pain. (4) Where there is total or partial division of the tendon and joint of the knee, accompanied by flow of synovial fluid, and often a fracture of the bone, if the case is seen immediately after the injury a cure may be effected by careful and patient nursing and attention, but the joint will remain permanently stiff. Any of the astringent lotions and agents used for the flow of synovial fluid can be applied, but on no consideration should strong or drastic remedies be resorted to, as they do more harm than good, and cause sloughing of parts when not required.

GESTATION AND INCUBATION TABLE

Gestation

Mare	48 weeks	Bitch	9 weeks
Ass	48 ,,	Cat	9 ,,
Cow	40 ,,	Rabbit	30 days
Ewe	21 ,,	Ferret	42-45 ,,
Goat	21 ,,	Fancy Rat	20 ,,
Sow	16 ,,	White Mouse	12 ,,

Incubation

(Dated from the laying of the last egg)

Fowl	21 days	Pigeon	18 days
Turkey	28 ,,	Canary	14 ,,
Duck	28 ,,	Peahen	25-30 ,,
Goose	30 ,,	Guinea Fowl	26 ,,

Slight deviations may occur at times, due to various causes.

DISEASES OF POULTRY

Until quite lately it was the custom to ascribe nearly all poultry ailments to colds. Now avian maladies receive more attention both on the Continent of Europe and in America, the United States Bureau of Agriculture giving special study to the subject. Veterinary-Doctor Salmon has distinguished himself, and written a book embodying his own studies with the results obtained by the most eminent Europeans. Nearly all bird diseases are due to parasites, many of which require high magnification to detect. We deal with the problems here in alphabetical order.

Abortion.—The extrusion of imperfectly formed eggs or broken ones previous to shell formation is spoken of as 'abortion.' It may be induced by fright, as when dogs hunt laying fowls or they fly from perches placed too far from the ground. *Treatment* consists in quietude and seclusion, and the provision of more shell-forming material. Soft food should be given in which about 5 per cent. of baked and powdered oyster shells has been intimately mixed, or, in their absence, some prepared chalk plus a drop or two of tr. chloroformi et morphinæ. We may remark here that fowls take enormous doses of opiates with safety. Their astringent effect is observed, but not their narcotic influence. The story has been told in *The Chemist and Druggist*, and will bear repetition in this connection, of a medical man who inherited among other goods a number of venerable hens, and wishing to dispose of them in a humane manner gave a meal in which each bird partook of eight or more grains of morphine, went to roost, and—appeared next morning in search of breakfast when they ought all to have been dead.

Apoplexy.—Birds, apparently in robust health, fall suddenly, and are found either dead or insensible. Hens may die on the nest while ejecting the egg. The only hope of cure is in immediate bleeding by opening one of the largest veins on the inner side of the wings by a longitudinal incision. So long as the thumb is pressed on the vein at any point between the body and the cut, blood will flow. The disease is generally caused by a too liberal or a too stimulating diet—hemp-seed or an over-supply of pea- or bean-meal—and habitual feeding on maize, which, in this humid climate, produces internal fat and a predisposition to apoplexy not observed in the United States or Canada. Where one or two birds in a flock thus fail attention should be directed to the diet and general well-being of the remainder, and a radical change made. Depletive remedies should be prescribed for all that have been under the conditions which caused the death of their fellows. A soft morning ration of meal in which nitre and magnesium sulphate have been dissolved is about the best thing to give. The number of fowls should be ascertained, and the dose reckoned at one grain of nitre and ten of the sulphate. It should be kept up for a week, and if any difficulty is experienced about getting the birds to eat it, a little poultry spice may be added. If 'pilling' is preferred, a grain of calomel and five grains of jalap may be given (once only). Each bird should be gently taken off the perch at night, the pill given, and the bird replaced, so as to have no falls or frights. Short commons is essential.

Baldness and White Comb.—These conditions are often found together, but they are due to quite different causes. A number of parasites of the mite class (*symbiotes*) attack the fine feathers of the head and the inflammatory action causes them to come out. Baldness is often due to lice and bad management. Keep the runs clean, and give plenty of green food. A piece of rusty iron in the water is often very useful. The whiteness or pallor of the comb is due either to anæmia, and reflects the condition of the bird as the membranes do that of an animal, or else to accumulations of another variety of mite which causes the piling up of masses of cuticle. (*See also* Scaly Leg, p. 358.) In *treatment*, we can hardly err in prescribing an emollient with sulphur, such as—

Lactis Sulphuris	ʒj.
Acid. Carbolic.	♏x.
Adipem ad	℥j. M.

Apply each night.

For the pallor (not accumulation of white *débris*), we may advise ferrous sulphate in solution with the food, calculating on each adult fowl getting two or three grains, or ferri carb. sacch. in pills, with a grain of quinine and one of gentian extract. These may be also recommended for the bringing on of winter layers. The much prized November egg will arrive a fortnight earlier if a pennyworth of iron is taken by the pullet which looks red in the comb, and promises much but does not 'prate.' The pills must not be given when this stage is reached, or we may have apoplexy to deal with.

Black Rot.—Under this misleading name at least two widely different maladies are included. In the case of ordinary fowls (*Gallus banckivus*) it usually means an advanced apoplectic state, when the comb goes a dark purple colour from stagnation or decomposition of the blood; the comb being an indicator merely, as pointed out in connection with laying, of hyperæmia, and its opposite, anæmia. It is not then a disease, but a symptom. The other case is that dread disease of the turkey rearer, and the symptom is but the precursor of death from infectious entero-hepatitis. It is caused by one of the protozoa (*Amœba meleagridis*), which is taken into the digestive canal with the food, and soon sets up a condition of the cæcum not unlike malignant typhus in the human subject. No *treatment* should be attempted. The detection of the malady directly it makes its appearance is of the utmost importance, and clients should be advised not only to burn carcases, but to search the neighbourhood for any bird that may have wandered away and died. The best service we can render is to impress upon the flockmaster the desirability of thorough disinfection : not the perfunctory performance which is usually entrusted to the most stupid man on the farm because he is least wanted in any other department. Every movable fitting, such as perches and nest-boxes, should be brought out and dipped or painted with paraffin and set alight until it may safely be assumed that a crust of carbon will be found when the fire is extinguished with buckets of water held in readiness. The inside of the roosting-house should be sprayed with a suitable disinfectant, and whitewash and chlorinated lime, or any other of the many reliable preparations known to chemists, used freely on roof, walls, and floor. The soil round about the fowlhouse should be ploughed if possible, and if this is not practicable, as with roads, these should be saturated with disinfectants and finished with a heavy dressing of salt and soot and lime. The expense of such proceedings is a mere trifle compared with the loss which may be expected if these precautions are not taken.

Bronchitis.—There are several varieties of bronchitis, and we should differentiate between them in order to prescribe successfully. Only a few advanced poultry-men realise that any draughty shanty is not good enough to keep fowls in. Most are habited in too close proximity, where a cutting draught is expected to compensate for bad air : hence the large number of cases of catarrh which by the common process of invasion becomes bronchitis. This is detected by the harsh dry cough. The fowl seems to be thirsty, and goes to the drinking-trough often, trying to soothe the pain. *Treatment* of this form consists in good nursing and the administration of expectorants, as we must call them for want of a word that applies to creatures which do not expectorate. Wash out the mouth and nostrils with a dilution of Condy's Fluid. Keep the bird warm, and give camphor pills or a draught of tinct. camph. co. or eucalyptus oil and glycerin. Pulv. ipecac. co. or pulv. scillæ co., in 2 to 5 grain pills, is suitable, and tonics may also be administered. The loss of sleep which catarrhal affections cause is productive of debility, besides the indifference to food which is usual with an increase of temperature. Iron, nux vomica, and gentian in pills may be advised. It is seldom worth while to treat *Bronchitis of Roup* (*see* Roup, p. 368). For *Verminous Bronchitis*, due to parasites, *see* Gapes, p. 359.

Bumble Foot is a deformity of the foot generally caused by perches with square edges, and from being too high. Heavy birds, and indeed all fowls perched high up, need a long space to fly down if they are not to come too soon, and therefore with too much force, on their feet and breastbone, which is frequently found to be curved from the same cause. When an abscess forms, bathe in warm water and apply boric or carbolic ointment, keeping the fowl on a soft floor until better.

Canker, or **Ulceration.**—This exhibits itself as a cheesy growth or ulcerated condition of the mucous membranes of the mouth or throat, sometimes also affecting the eyes and nostrils so as to cause actual suffocation. Among the remedies recommended are liq. sodii chlor. as a lotion with which to swab the mouth and throat, solution of alum or carbolic lotion, 1 in 20, used in the same way. Some recommend the growth to be scraped away, and the spots touched with argent. nitr. As it is now generally believed that the disease is of a tuberculous nature and highly contagious, birds affected in this way should be promptly destroyed and their carcases burned.

Catarrh and Roup.—Fowls which roost in houses are very subject to catarrh; those roosting in trees, rarely. It is not cold and exposure, but bad air and draughts, which induce catarrh. (*See also* Bronchitis.) Roup is not a bad cold or sequel to it, in the sense that a nasal gleet is an after-effect of a cold in a horse, but the conditions in which fowls are kept—filthy for the most part—are such as to favour the distribution of pathogenic organisms, which may have lain dormant until a catarrhal condition of membranes offers an inviting seed-bed. Hence we often find birds with neglected colds take roup later on (*see* p. 368). *Treatment.*—Good hygienic conditions are all that is necessary, but see recommendations made in the case of bronchitis.

Cholera.—Chicken cholera, although not so common as it formerly was, is still at times a severe scourge in the poultry yard. It is highly infectious, and in character and symptoms is not unlike human cholera, appearing in hot weather and sometimes becoming enzootic. It is due to a specific bacillus. Its symptoms, although not always uniform, are a sudden accession of thirst, accompanied by diarrhœa, at first of a greenish, then 'rice water' description. There is great weakness and prostration, with probably a 'cramped' condition. *Treatment.*—Isolate all infected birds and try brandy, rum, or port wine with sugar and water several times daily, adding a few drops of chlorodyne to the first few doses. Boiled rice with a little ginger and prepared chalk is also useful : give in pill form if the birds will not eat it as food. If recovery follows, give a little cod-liver oil, add tr. ferri perchlor. to the drinking-water, and feed with care. Removal and burning of dead fowls and disinfection of coops and food- and water-troughs are essential.

Comb, Injured.—Any cut or injury to the comb should be dressed with tincture of myrrh. The combs of the larger breeds are liable to become chapped and develop sores. An infallible cure for such cases is a mixture of sweet oil and paraffin.

Cramp.—Young chickens sometimes suffer from cramp when exposed to damp and cold wind in early spring, and frosted grass in late autumn ; old birds are rarely affected. When observed, they should at once be removed to a dry, clean, boarded floor liberally sprinkled with sand or fine peat moss, and the legs rubbed two or three times a day with 'white oils.' Good henwives bring in the chicks and cover with flannel, placing near a fire but not above it. Bottom heat from hot-water bottles does not suit chickens, but they quickly respond to warmth from above.

Crop-bound.—This name is given to distension of the crop, either by over-feeding and subsequent swelling of the gizzard, or by the presence of some single object too large to pass into the stomach. *Treatment.*—First pour warm water down the throat to soften and loosen the food, kneading the crop for some time with the fingers. Then give a tablespoonful of castor oil or from 5 to 8 grains of jalap mixed in butter. If this should not be effective, as a last resort the crop must be opened. Cut into the upper part of the crop with a sharp penknife about an inch, loosen the mass with some blunt instrument, and remove it; if very offensive, wash the crop out with warm water. Feed for a few days on soft food, adding a little of the spice recommended under Catarrh. If the incision is small it may be left, if large a stitch or two should be inserted. Breeders and feeders should be warned never to give crusts or hard pieces of bread without softening them in milk or water.

Crop, Soft or Swelled.—This is another form of distension of the crop as the result of indigestion. *Treatment* as for the first-mentioned form will be suitable, allowing only a moderate quantity of water and soft cooked food for a time. In both forms a compound rhubarb pill is occasionally useful.

Croup and Canker.—A purge of castor oil should be first given, after which the following pill will often be found useful:—

Pulv. Capsici	gr. v.
Pulv. Cupri Sulphat.	gr. iij.
Syrup.	q.s.

Fiat massa. Make into an oval pill, and roll in liquorice powder. A pill to be given twice a day.

Debility.—Anything that tends to lower the vitality of the birds will induce this condition, apart from any actual disease. It is best treated by the exhibition of chemical food in ʒss. doses, or the 'Douglass Mixture' (*see* below). Cod-liver oil emulsion and tinct. ferri perchlor. or ferri carb. are also very useful.

'Douglass Mixture' for Moulting Birds.—Dissolve 1 oz. of iron sulphate in 1 quart of water, add 1 drachm of dilute sulphuric acid, and put 1 teaspoonful of this mixture in each quart of drinking water. When chickens droop and seem to suffer as the feathers on the head grow, give them once a day meat minced fine and canary-seed.

Diphtheria.—A very serious disease which must be taken in hand promptly, otherwise cure is improbable. The principal symptoms are an offensive smell and a characteristic discharge from the nostrils and mouth. *Treatment.*—Keep the bird warm, and give warm nourishing food, such as oatmeal, egg, etc. Wash the mouth and nostrils with warm water containing a little carbolic acid. Give castor oil every other day if required.

Dropsy of Comb or Wattles is another troublesome disease, though not considered dangerous. The comb swells and becomes dark purple in colour. The remedy is to open the affected part and allow the matter to escape, then cleanse with warm carbolised water and dress with a mild astringent ointment, such as boric or zinc. Give tonics and nourishing food.

Diarrhœa is common in changeable, cold, wet weather. Eating fish also causes it. If observed in its early stages it can usually be checked by feeding on boiled rice, with which is mixed a little chalk in fine powder, or a pill of the same to which has been added 5 minims spt. camph. may be given twice a day, and if very severe pulv. opii gr. ss. may be given with it. *See also* Cholera (p. 355).

Dysentery (Bloody Flux).—Should diarrhœa go on to this stage, it is rarely cured, but above treatment may be persevered with for some time. Opium pills combined with an astringent, such as cret. præp. or acid. tannic., are given.

Egg-bound.—Sometimes on account of the large size of the egg a hen or other bird is unable to expel it from the oviduct. A little olive oil should be passed up, taking care not to break the egg ; at the same time fomenting the 'vent' with warm water so as to relax the tissues around. This is best accomplished by sitting the hen over a bucket of steaming bran.

Elephantiasis, or **Scaly Leg.**—A very troublesome ailment, due to a parasite and most frequently affecting Asiatic breeds and bantams. The scales tend to rise up, and if neglected a white floury substance exudes, forming the dense masses from which the name is derived. *Treatment.*—Wash the legs with warm water, dry, and with a hard brush apply paraffin either alone or mixed with turpentine. When the scales have dropped off, bathe and apply vaseline, or a mixture of equal parts of zinc ointment and vaseline.

Feather Eating.—This vice is generally due to depraved appetite, and is therefore more frequent among penned birds in towns than among farmyard fowls. The want of insect food and of green stuff has been thought to cause it, and in some cases no doubt the feather mite which lives upon the sprouting feathers of the smaller and softer kinds. The hens begin by pecking an itchy part, and end by acquiring a taste for the blood which young feathers contain. We have observed that maize-fed fowls develop this trick more than others, and that it has often been forgotten when a well-balanced ration has been substituted. A mixture of bone meal, meat, green and boiled vegetables (not potatoes) should be given, and if an ant hill can be dug and carried in a wheelbarrow to where the hens feed it will prove more valuable than any medicine. Since any of the causes of indigestion may give rise to feather eating, the whole conditions under which the birds are kept should be reviewed. It may be lack of grit, but still more likely want of exercise. Penned fowls should be sparingly fed, and their grain covered over with short litter and road dust, so that they get a certain amount of exercise in scratching for it. The reader may have observed how shut-up fowls which have been habituated to maize will appear not to see barley and millet and other small seeds much more suited to their health. They should recover appetite by fasting. Plenty of fresh water is absolutely necessary, as fowls not only refuse to drink enough of soiled water, but become infected by it more readily than by the hard dry grains of corn which do not attract soil to themselves like soft foods or water. Only general hygienic measures are possible where a flock is concerned, but for the town man with a few fowls to treat we may recommend pulv. aloes ℈j. in vaseline or lard ℥j. as a smear. If the cause is parasitic, flor. sulphuris ℈ij. may be added with advantage.

Gapes.—This malady takes its name from the most prominent symptom, which is absolutely diagnostic. It is a parasitic disease due to the presence in the windpipe of numerous thread-like worms, known as *Sclerostoma syngamus* or *Syngamus trachealis*. Its history is of yesterday, as compared with many parasites which have been described by writers anterior to the Christian era. Since modern science refuses to accept any form of life as of spontaneous origin, or arising *de novo* and without ancestors, we can only suppose that, prior to the observations of Dr. Wiesenthal, in Baltimore, U.S.A., in the year 1799, no one had noticed the parasite, or a knowledge of it was confined to a few gamekeepers, who could not write or 'died and gave no sign' of their acquaintance with it. Our first English record of the malady among chickens is due to Georges Montagu, who reported it as prevalent between the years 1806 and 1809, and subsequently recited numerous examples of it among game birds, especially pheasants and partridges. During the last quarter of the nineteenth century it gained ground in this country, particularly among pheasants, not so much from specially favourable climatic conditions as from the increasing artificial rearing of too great a head of game on comparatively small holdings, which soon became 'stenched' with any creature originally intended to be sparse and scattered, although polygamous and sociable at certain periods.

Gapes is not absolutely confined to the more or less domesticated birds, wild ones being occasionally found infested, but only to a slight extent, and then under conditions where it may be assumed that they have fed off tainted ground used by poultry. It is the young chick of a week to a month old that is most commonly affected, adults either escaping or having the constitutional vigour to cough up or otherwise dispel or outlive the invaders. *Syngamus trachealis* is a round, red worm, and usually found in the trachea, united to the opposite sex permanently by an integumental junction, which lasts until the female bursts with ova or is ejected by accident. It is not known if, at maturity, they ever voluntarily seek another home; but specimens may be found upon the ground whole as well as broken. The whole worms are eaten by the

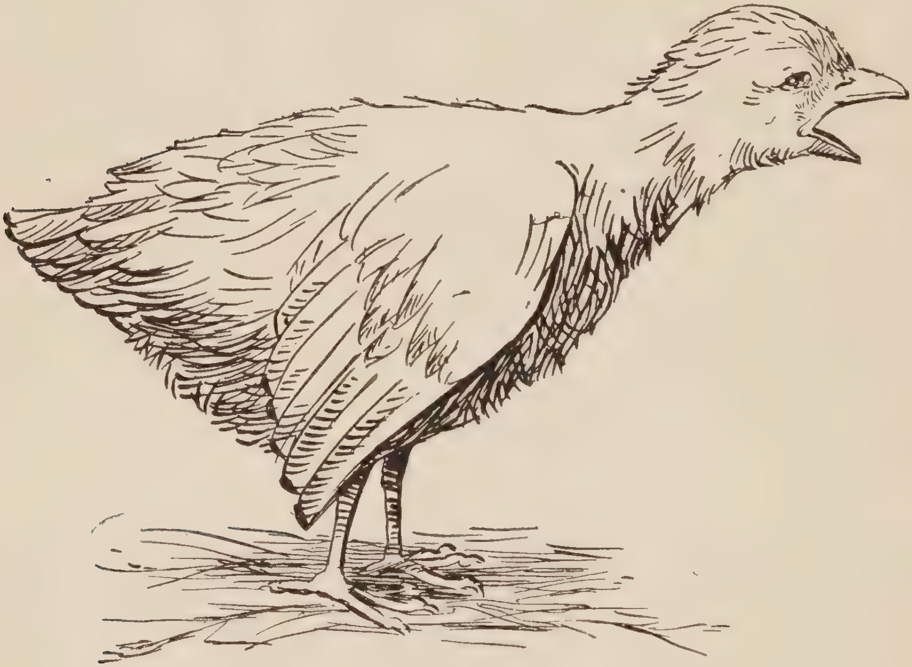

FIG. 41. CHICKEN GAPES.

chicken, and re-infestation thus takes place. The ruptured females contribute to future generations when the eggs have passed through a period of development in damp, low-lying soils.

Although these conditions of soil are not essential, and gapes may break out on a well-selected site for pheasant-rearing, it is beyond doubt more prevalent in damp situations and in wet seasons, as is the case with flukes of sheep, filaria of calves, and other parasites which are either proved to have an intermediate life in the smaller molluscs, or, for good reasons, so suspected. Another source of re-infestation of the chick is to be found in the passage of mature ova from the worm while still attached to the tracheal membrane. This is, in fact, a long bag of eggs in various stages of development, and always *in coitu* with the male, which in the illustration looks like a branch of the female, and is only one-fifth of the size (the mature female measuring about ½ inch).

The armature of the mouth is of such a kind as easily to penetrate the delicate lining-membrane of the trachea, in order to suck the blood of its victim, and it will be understood how considerable must be the inflammation resulting from a score or more of these comparatively large parasites making independent punctures. Their presence alone constitutes a serious impediment to respiration, and gives rise to the gasping for breath which is commonly called gaping or 'the gapes.' The weak birds succumb readily from exhaustion, suffocation, or anæmia, or all these conditions combined, while the older and more vigorous suffer a serious check in their growth and

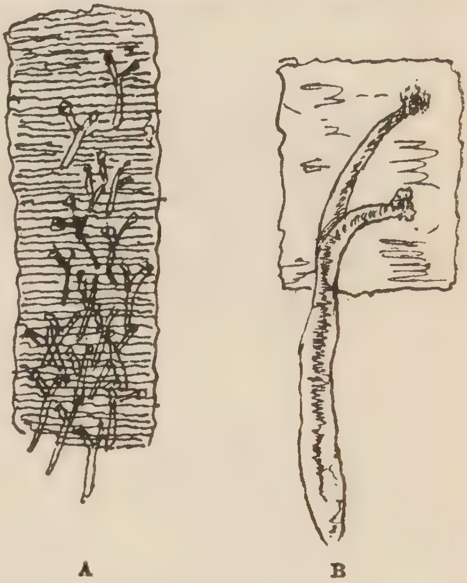

FIG. 42. SYNGAMUS TRACHEALIS.
A. Portion of windpipe with worms attached (natural size). B. Male and female worms attached to membrane (magnified).

development which may make all the difference to the poultryman between a profit and a loss at the end of the season. It may be taken as proved that the land is infected for at least the succeeding season where birds have been reared and have suffered from gapes. One further proof, if proof were necessary, can be found in chicks becoming infected by being fed upon earthworms which have lived in infected poultry-yards. It would appear that the common or garden worm plays a very important part in several of the diseases which affect animals, carrying either ova or spores in such diverse maladies as gapes in chickens and anthrax in cattle.

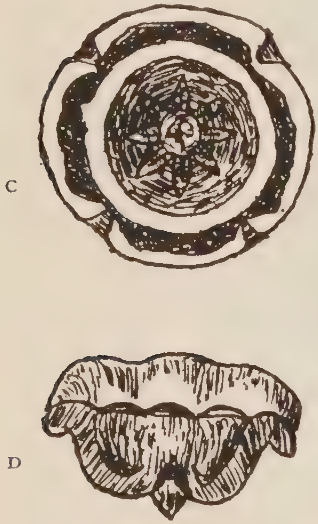

Fig. 43.
SYNGAMUS TRACHEALIS.
C. Sucker of female worm.
D. Side-view of sucker.

Symptoms.—It has been already stated that gaping is the diagnostic symptom, but prior to this protrusion of the neck and wide opening of the mouth there may be observed a loss of activity, indifference to food, or sudden failure of desire after commencing to feed, then a cough, a whistling sneeze, the appearance of mucus at the nostrils or corners of the beak, and the ejection of worms during the more violent paroxysms. The neck is retracted in the intervals of gaping. With the progress of the malady anæmia is evident in the pallor of the membranes, the standing-up or rough way in which the feathers remain, and, lastly, the drooping of the wings. After this stage is reached shaking of the head and convulsions follow, and the end is near.

Treatment.—The history and various means of propagation indicate the first line upon which we should attack this insidious parasite. Where possible the whole flock should be removed to new ground, and in any case the soil, the runs, and floors should be heavily salted or dressed with any known worm-killer innocuous to the feet of fowls. Manure and refuse, whether from the birds or other animals, should be taken away. All drinking-vessels must be disinfected, and the coops and other furniture saturated with a 5-per-cent. carbolic-acid solution. A great Continental authority (Megnin) recommends salicylic or sulphuric acid in 1-per-cent. solution for this purpose. These measures are largely successful in arresting the spread of the malady, but the question remains, What to do with those birds already the hosts of the syngamus? Readers have very likely some bad stock in the way of advertised remedies, recommended for the most part by makers ignorant of the life-history of the gape-worm, and they will find ultimate appreciation by their clients if they will be at the trouble of going into the disinfection question thoroughly and supplying the more suitable remedies. If the mouth of a fowl suffering from gapes or roup is opened, the membrane can generally be removed with the finger-nail or a feather. To men whose fingers are 'all thumbs' it is not much use recommending operative interference, but the deft-handed chemist, accustomed to fine manipulation, will easily succeed in showing the more intelligent among his poultry clients how to remove a considerable proportion of the worms from the trachea. The little patient should be held by an assistant while the beak is opened and the tongue drawn out by a pair of forceps. This will bring some of the worms into view, and in any case enable the operator to introduce a camel-hair pencil dipped in terebene, or a loop of horse-hair. The latter is best under control when folded and passed through a small quill: the size of the loop

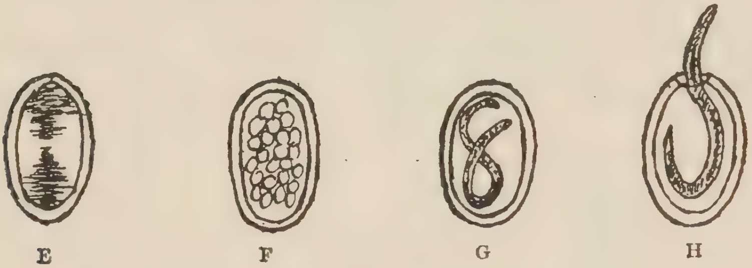

FIG. 44. EMBRYOLOGY OF SYNGAMUS TRACHEALIS.

E. Granular vitellus, mesean portion becoming constricted. F. Segmented vitellus. G. Developed embryo. H. Embryo escaping, valve detached.

is thus constant, and the quill forms a convenient handle. A number of syngami may be fished up, and a greater number detached by means of this instrument (or a feather) twisted round while inside the upper portion of the trachea. A paroxysm of coughing may be expected to follow this operation, with or without terebene or other anthelmintic dressing, but in the great majority of cases something like a cure is the result. The number of worms will be so lessened as to give their victim a new chance of gaining strength and ultimately overcoming them. Medicines administered internally have an undoubted effect in keeping down the worms. If they do not actually kill adults firmly attached by suckers, they appear to make the host undesirable, and limit production, while affording to the bird those benefits to be expected from tonics when taken by the weak and anæmic. The following are powders to place in the food :—

Pulv. Cubebæ	℥j.	
Ferri Hydrox. Rub.	℥j.	
Creosoti	ʒj.	M.

As much of this as will lie on a shilling to be put into the food for twelve fowls; or make it up into pills each containing 2 grains of the above, and give a pill thrice daily.

Pulv. Gentianæ	℥ij.	
Pulv. Zingiberis	℥j.	
Pulv. Capsici	℥ss.	M.

A teaspoonful in the food for twelve fowls.

The less irritating forms of iron, as saccharated carbonate, are to be recommended, combined with asafetida and gentian. Garlic is said to be almost a specific, and may be given as a pill with the other suggested ingredients, or in a food-paste, as its odour is not at all objected to by chickens. Camphor (in pill) and sulphur (either with the food or in pill-form) have given good results. Copper sulphate added to the drinking-water, in the proportion of 15 grains to each quart, is often effective. Epsom salt, sodium bicarbonate, and sulphur in the water prevent and cure alike. According to a specialist, carbolic acid is another cure when vapourised thus :—

> Take a wooden box, a little bigger than a biscuit-tin, and divide it in two by means of a piece of wire netting. Now place half of an ordinary brick, made very hot by means of fire, on one side of the wire netting and the chicks on the other. Cover the whole box with a cloth, and then insert under the cloth a *table*-spoon with a teaspoonful of the cure in it. Now pour the liquid on to the hot brick and withdraw the spoon. The fumes will cure the chicks in two minutes. Take out the chicks *just before* they are apparently suffocated. *Be careful to keep the hands and face away from the liquid* when it is poured on to the brick, as it will blister the skin.

The treatment is rather drastic. It would be better to use a carbolic-acid vapouriser in a coop.

One has always to remember, when consulted about the diseases of poultry, that it is of the first importance to isolate affected birds and direct efforts more to the preservation of the flock than to the cure of the individual.

Indigestion.—All that is meant by indigestion is to be expected among fowls artificially selected for breeding, artificially fed, and artificially kept. Yet it has been frequently asserted, and with truth, that anyone with a back yard 12 feet square may keep half-a-dozen fowls in health. It is true, but he who would keep them must take an infinite amount of pains to supply such food and other things as they would obtain for themselves in a state more nearly approximating to the wild or natural condition. They must be kept scrupulously clean, supplied with plenty of grit and clean water, and compelled to take exercise in search of food. Short straw or shavings should be shaken over their grain, and maize should only be given at night in the short days of winter, when so many hours are spent on the perch. Distension and paralysis of the crop is a common trouble ; so is diarrhœa, and in most cases it will be found that the remains of a fish meal have been thrown into the run. There is no more certain method of inducing purging. Too much potato is another frequent cause of diarrhœa in penned fowls.

Treatment.—In almost all forms of indigestion it is good treatment to begin with a teaspoonful of castor oil. Novices may be reminded that the time to physic fowls is after dark, as they will then allow themselves to be lifted off the perch : while daylight medication means a preliminary hunt, distressing alike to patient and doctor. Pil. rhei co. gr. v., or a rhubarb and soda mixture in doses of about one-sixth of what would be prescribed for a human subject, will be found helpful. Exhibition fowls are often of great value, and the counter prescriber will do well to take the subject of poultry doctoring seriously. Bismuth and catechu are also successfully employed. Atony of the proventriculus and paralysis should be treated with tr. nucis vom. ♏ij., with aromatics (*see* Crop-bound, p. 356).

Leg Weakness is common in young birds of the larger breeds as a result of their rapid growth and want of bony material in the food. The symptoms are constant squatting on the ground and disinclination to move. Bone-dust, lime, etc., should be given in the food, and 20-drop doses of syrup. hypophosph. co., or half a teaspoonful of chemical food, twice a day. Or 3 to 8 grains of ferri et ammon. citr. once a day. Keep rusty iron in the drinking-trough.

Liver Disease is evidenced by a sickly yellowish appearance about the head and comb. It is generally the result of over-feeding on too fattening material, such as maize and other starch foods, with highly spiced condiments. It sometimes causes much loss if neglected. If of a mild type, and when first noticed, Epsom salt and blue pill will often have a good effect. Treatment should be directed to reducing the fatty condition and arousing the liver to work by daily doses of calomel gr. j., or a pill as follows—

Podophyllin.	gr. ¼
Pil. Rhei Co.	gr. ij.

—daily for a week, or until there are signs of improvement. In tuberculous disease of this organ of course there is no cure, and if suspected the best course is promptly to destroy the sufferer and burn the carcase.

Loss of Feathers.—Sometimes the feathers have been pecked out by the other birds. In such cases the pecked parts should be smeared over with sulphur ointment, cut or broken feathers should be removed, and the bird separated from the rest. Generally the loss of plumage is the result of too little green food or of bad housing. Nothing will restore the feathers till the next moult. See that there are no lice when the bird begins to pick out feathers, as these often lead to a start.

Paralysis affecting either of the limbs is incurable.

Parasites (External).—With ordinary care and attention birds can be easily kept free from parasites. The houses ought to be frequently lime-washed, carbolic-acid solution or powder freely sprinkled about, and insect powder on the birds will free them from most pests. Dipping the bird in a weak solution of any soluble disinfectant or parasiticide not stronger than 1 to 40 or 50 will be effectual to free them from lice. Sitting hens should have flowers of sulphur under them.

Pip.—Furred tongue, horny tongue, etc. If very much thickened the tongue should be scraped, and a lotion of liq. sodii chlor. or borax applied. A dose of pil. rhei co. should also be given daily for a week, from gr. ij. for a young fowl to gr. iv. for a fully grown one. Alum. exsicc. put into the mouth answers the purpose of clearing the tongue.

Rheumatism.—All birds are subject to this affection as a result of bad housing and cold or wet runs. It shows itself by the occurrence of stiff swollen joints ; at the same time the toes are cramped and contracted, with painful gait. It is distinguished from leg weakness by the evident pain which it gives. A warm and dry house, and warm stimulating soft food, to which is added cayenne or other spice, with potass. chloras in water, is the best treatment. At the same time the legs should be rubbed with equal parts of turpentine and oil, or 'white oils,' and give internally sodium salicylate in three to five grain doses thrice daily.

Roup (Cold, Catarrh, etc.).—Various affections of the respiratory organs go by this name. The most prominent symptoms are those of an aggravated catarrh, shown by sneezing and gasping, with a discharge from the eyes and nostrils sometimes so bad as entirely to close these. If neglected the disease speedily ends in death. It is very contagious, and therefore the sufferer should be promptly isolated and disinfectants used. The bird must be kept warm and dry, and a dose of castor oil given; the nose and eyes should be well sponged, and syringed with a solution of liq. sodii chlor. 1–2, and if the nostrils are plugged with the discharge this solution ought to be injected into these, the mouth and throat also receiving the same treatment. Give 10 minims liq. ammon. acet. and a pill night and morning as for gapes, or

Pulv. Cubeb.	gr. j.
Cupri Sulph.	gr. ss.
Copaibæ	gtt. iij.

Fiat pil.

Inhalations are found successful in many cases, but unless birds are particularly valuable for stock purposes, it is almost certain to be cheaper to destroy every affected one. The following is the composition of a favourite, and it is to be put into a W.M. bottle, and the sufferer's head held over it in such a manner as to compel him to inhale the fumes:—

Acid. Carbolic.	ʒij.
Ammon. Carb.	℥j.
Terebeni	ʒj. M.

The patient should be held up by the heels for a few minutes night and morning, before the inhalation, as a lot of fluid will escape from the mouth and nostrils, and afford the medicaments much better access to the diphtheritic, or, to be more exact, roupous, membranes. As a matter of fact, the membranes may remain in a catarrhal condition for some time and recover, or go on to a croupous or diphtheritic state. As recommended elsewhere, if the presence of tubercle is suspected the bird should be destroyed and the carcase burned, in the interests of health and humanity. (*See also* Catarrh, p. 354.)

Soft Eggs.—This condition is sometimes a result of over-feeding and want of grit or gravel; hence the remedy is easy—grit, calcined oyster-shells, old mortar, and, in the drinking-water, some lime, so as to provide material for forming the shell.

Thrush.—Tincture of myrrh and borax diluted with water, to wash the tongue and mouth with twice daily, is the best treatment.

Tuberculous Diseases.—Scrofula, Ulceration, Canker, Consumption, etc. Domestic birds are very subject to tubercle in various forms, and nearly all the organs of the body may become affected. The principal symptoms are cheesy-looking or calcareous growths, or maybe ulcerations, on any organs, such as lungs, liver, mouth and throat, nostrils. Treatment is of no avail, and the bird should be at once destroyed, and even a healthy-looking fowl when killed ought to be examined for evidence of this disease, and if present it should not be used for human food. All carcases should be burned. Bacteriologists have rarely discovered the tubercle bacillus in eggs that have been laid by tuberculous hens; but it may be advisable to abstain from hatching them.

Vermin.—Occasionally fowls become verminous. This is the outcome of carelessness and laziness. Poultry cannot thrive with vermin about them. When affected dust insect powder over the bird, and scatter in nest-boxes; and pitch-pine sawdust or shavings in the nest will prove effectual.

Vertigo.—The birds run in circles or flutter about without control of their movements. Hold the head under a stream of cold water for a time. Give 3 grains of calomel and 10 grains of jalap. Keep on low diet.

TURKEYS

Sores over the Tail.—Abscess sometimes forms in this situation, causing the bird to depress the tail and suffer a good deal of discomfort. When found to fluctuate under pressure of the finger, the swelling should be lanced at the thinnest point and the matter evacuated by gentle pressure, syringing or bathing with an antiseptic of the lysol class.

Diarrhœa is caused by too much green food. Give warm food, chick-peas, and powdered tormentil. Or give 5 grains each of powdered chalk and rhubarb and 3 grains of cayenne pepper. If the flux is not checked, give 1 grain of opium and 1 grain of ipecacuanha every four hours. (*See* Indigestion, p. 365.)

Epilepsy.—Give aperients, and anoint the head with olive oil. Much green food must not be given.

Lice result from uncleanness. Dust into the feathers flowers of sulphur or sawdust moistened with benzoline or carbolic acid; and lime-wash the hen-house, adding a little carbolic acid to the wash. A good method is to slake half a bushel of lime, and when cold mix with it 10 lb. of sulphur and 1 oz. of carbolic acid. After sweeping out the hen-house, drive out all the birds, close all the doors and windows, and begin at the further end and walk backward, scattering the mixture freely all over the floor and through the air, on to the perches and into the nests, everywhere thoroughly—leaving a dense cloud of medicated dust suspended through the house. Gradually it settles in every crack and crevice, and wherever it reaches a hen-louse or other insect destroys it. If the chickens have roup, leave them in the house; it will not kill or hurt them, but the sneezing will be terrific, and every particle of mucus that has accumulated in the air-passages and throat will be expelled, and the medicated dust will reach every portion of the membrane and cure it too. In cases of gapes, too, this treatment is likely to be successful. It kills the worms in the air-passages and makes the chicken cough them up, and so cures the case at once.

Pip.—This is commonest among the young ones. To prevent it, add to the drinking-water thyme or pepperwort or nigella-seed, and let them often run among green food. The pip—a white horny skin—should be cut from beneath the tongue with a sharp penknife, and taken out. Moisten the part with salt dissolved in wine vinegar, and give nothing to eat. Bread cut in cubes and soaked in vinegar is good later on.

Worms on the Head.—Hang the birds up and search the head thoroughly. If small brown worms are found, which quickly become larger and feed on the head, drench with fish oil or ol. animalis and ol. picis equal parts, and thereafter rub with the latter occasionally.

GEESE

Diarrhœa.—Place bruised twigs and buds of a young pine tree in the drinking-water. Mix bruised thistles with groats as food, and once a week add some tobacco ashes.

Gnats and Flies creep into the little cavities in the ears and nostrils of young geese and kill the birds. Anoint the ears, in June and July, with linseed or olive oil. If the disease is severe, put barley at the bottom of a deep trough filled with water. The birds in reaching for the food put their heads deep into the water and wash the vermin out. Fresh fern fronds often strewed in the run drive away the insects.

Lice generally affect the young in summer. Rub the affected places with tobacco ashes, or with a mixture of fish oil and rape oil; anoint the head, and the sides under the wings. If they show themselves on the throats of young geese, which is often fatal, rub the throat with mercurial ointment.

Pip.—Greater pimpernel plant should be steeped in water, the herb given as food, and the infusion as drink. The sore should be cut off, and the wound anointed with unsalted butter.

PIGEONS

Swelling of the Crop results from eating too much fresh corn. Pay attention to the feeding, and if the crop swells, soak bread in brandy, and give as food.

Pigeons should always be supplied with old mortar or chalk in a box, where they can peck at it, and with a lump of common salt in another vessel. It is a good plan to put some lavender-stalks about the pigeon-house occasionally, and before stocking it.

The Parasites that infest pigeons are fleas, lice, feather lice, mites, and ticks. Persian insect-powder is efficacious in all cases. *Fleas* may be killed by sprinkling a little snuff over the birds, and into their nests.

Lice usually attack weak birds. A little powdered sulphur should be dusted among the feathers, and the birds should be kept clean and in good condition.

Mites are very small insects which inhabit the cracks and nooks in the walls of the pigeon-house, issuing at night to feed on the blood of the birds. They sometimes enter the ears of young birds and cause intense annoyance. A drop of oil on the ears, under the wings, or wherever mites are seen, will destroy them. The walls should be smoothed and all cracks stopped. Birch twigs and heath should be given for the nests instead of hay. The house may be whitewashed.

Ticks are larger parasites, infesting generally the head and back. Cleanliness and sulphur are the only remedies.

Feather lice are long, flat, tough insects which cling very tightly between the fibres of the feathers. Their food is the down on the quill end of the feathers.

Canker is a cheesy stinking growth on the mucous membrane of the mouth and throat. It is very fatal to young birds, and is thought to be contagious. Dissect away the cheesy growth with a bit of wood cut like a spatula. Touch the spot with lunar caustic. Give scanty diet and much exercise. If the flesh round the eyes is wounded by fighting, bathe with salt water for several days, and if this does not succeed, try alum and water.

Moulting.—If there are any broken stumps of feathers which the bird cannot remove, considerable suffering results. The stumps must be withdrawn, one by one, with a pair of pincers. Give hempseed, and add ferri amm. citr. to the drinking-water.

Pouters sometimes overgorge themselves with dry food, which swells in the crop, and is apt to cause death. The crop should be opened with a sharp penknife, the mass removed, and the wound sewn up. If skilfully performed, the operation is harmless.

Roup affects the mucous membranes of the mouth, nostrils, and air-passages. Warmth will cure slight attacks. A copaiba capsule is almost a specific. When the discharge from the nostrils is offensive and purulent, apply a lotion of nitrate of silver, 5 grains to 1 oz. The birds must be kept warm and well nourished; hempseed should be given. Dry roup is known by the dry, husky cough. Give three or four cloves of garlic every day.

Scouring, or **Diarrhœa,** is caused in weak birds by want of exercise. Give a chalk pill occasionally, or daily if required. Add a pinch of sulphate of iron to the drinking-water.

Scrofula shows itself in various forms. As *Wing-disease* it forms deposits of cheesy and scrofulous matter in and around the joints, especially of the elbow. In early stages tincture of iodine, applied externally, may cure; but in advanced cases the bird should be killed. When it attacks the liver, scrofula causes the formation of white tubercles. The birds lose flesh, and are said to 'go light.' They must be destroyed.

Sore Eyes are common among carriers and barbs. A lotion or ointment of silver nitrate should be applied. Among old birds there is a tendency to form spouts by the turning out of the lower eyelid. These may be removed by cutting them from below upwards with a very sharp pair of scissors.

Vertigo occurs in highly fed birds. Starve for two or three days, and reduce the food afterwards.

Wasting is said to be cured by green food, especially watercress. All domesticated birds, and probably some wild ones, if one may judge by samples sometimes shot, are liable to a wasting disease known to poultry-men as 'going light,' or *asthenia*. Prolonged investigations have been carried out in America, where as many as 30 per cent. of a flock are sometimes lost by asthenia. A bacterium of a special character was found in the duodenum, which produced a catarrhal appearance. Inoculation of a guinea-pig was followed by death in twenty-four hours, but chickens inoculated under the skin were not affected. We are, therefore, none the wiser, so far as any treatment or prevention is concerned.

Wing-disease is caused by a fungoid growth. In the earlier stages an ointment of mercury or copper oleate should be applied ; if the disease is more advanced a weak solution of mercury perchloride is the best remedy.

Pigeon Spice Balls

Where large numbers of pigeons are kept on the Continent, it is usual to place in the dovecotes little spiced loaves or cones, containing salt, spice, and earth, which the pigeons peck at, and which tend to keep them in health, and induce them to lay more prolifically. These cones are made in this manner: Ten pounds of vetch or other farinaceous seeds are mixed with 2 lb. of cumin seeds. Separately, sufficient clay is kneaded with water containing in solution 2 lb. of salt to make a soft dough. This is then thoroughly mixed with the seeds, and the paste is dried in the sun or in a moderately heated oven. Cakes are made from it and kept in a dry place, two or three being left in each dovecote. In the winter especially these form a valuable stimulating food for the birds.

PHEASANTS

Cold and Roup.—In cold damp seasons, weak broods of young are attacked by catarrh. Remove them to a warm, dry place ; give stimulating food, as bread soaked in ale, with cayenne or pepper, and moisten the oatmeal or other soft food with a solution of $\frac{1}{4}$ oz. of ferrous sulphate in 1 quart of water, using enough to give the meal an inky taste.

Roup is the name given to the disease when the nasal discharge has become purulent and contagious. The diseased birds should be at once removed.

Cramp.—Another ailment of young pheasants caused by cold, dampness, and sudden changes of temperature. It is very acute and often fatal. Give full doses of acetyl-salicylic acid, feed on kneaded barley meal with a little cayenne, and keep the birds warm and dry. Cramp is communicable to young birds if placed on contaminated ground, so that proper precautions must be taken to avoid infection.

Loss of Feathers.—*See* p. 367.

Scrofulous Disease. — *See* 'Tuberculous Diseases,' p. 369.

CANARIES

The bright plumage is obtained by feeding the birds with food containing a liberal proportion of powdered tasteless capsicum. Turmeric is also given, and plenty of egg-yolk. Colouring foods consist generally of powdered egg-shells and the mild capsicum. Another good formula is—

Capsicum	ʒij.	
Turmeric	ʒiss.	
Peroxide of iron	ʒss.	
Sugar	ʒiv.	Mix.

Aphonia.—Loss of voice often follows the contracting of a cold while moulting. Hang the cage out of draught, give a drop or two of castor oil, and put a teaspoonful of glycerin in the drinking-water. Place in the feeding-tin 20 grains of gum acacia, 20 drops of paregoric, and a slight sprinkling of cayenne, mixed with grated egg.

Colic Fever is caused by the food being either too hard or too soft. Canaries require a mixture of both, and some rapeseed should be included. A little glycerin in the drinking-water prevents the colic. To relieve the ailment give a minim each of chlorodyne, dillwater, and peppermint-water.

Red Mite.—To get rid of this most troublesome insect, dust the bird with insect-powder, especially under the wings, and paint the cage, including all crevices, with pine oil or terebene. If the bird bathes, add a teaspoonful of infusion of quassia to the bath-water. A white cloth thrown over the cage at night will attract the insects, which can then be destroyed.

A fine glossy plumage is obtained in show birds by giving from 5 to 20 drops of cod liver oil every day.

POSOLOGICAL TABLE

For cattle the doses are generally about the same as for horses, or an eighth more ; for sheep a fifth of the horse's dose ; for pigs an eighth, for dogs one sixteenth, and for cats one thirty-second of the dose for a horse. The doses given in the table are for average animals of full age. The following factors for regulating the doses for younger animals are quoted from Hertwig's 'Arzneimittellehre.'

I. Horses

	PART
From 3 years and upwards	= 1
,, $1\frac{1}{2}$ to 3 years	= $\frac{1}{2}$
,, 9 ,, 18 months	= $\frac{1}{4}$
,, $4\frac{1}{2}$,, 9 ,,	= $\frac{1}{8}$
,, 1 ,, $4\frac{1}{2}$,,	= $\frac{1}{16}$

II. Cattle

From 2 years and upwards	= 1
,, 1 to 2 years	= $\frac{1}{2}$
,, $\frac{1}{2}$,, 1 year	= $\frac{1}{4}$
,, 3 ,, 6 months	= $\frac{1}{8}$
,, 1 ,, 3 ,,	= $\frac{1}{16}$

III. Sheep

From 2 years and upwards	= 1
,, 1 to 2 years	= $\frac{1}{2}$
,, $\frac{1}{2}$,, 1 year	= $\frac{1}{4}$
,, 3 ,, 6 months	= $\frac{1}{8}$
,, 1 ,, 3 ,,	= $\frac{1}{16}$

IV. PIGS

PART
From 1½ year and upwards . . = 1
,, 9 to 18 months . . . = ½
,, 4½ ,, 9 ,, . . . = ¼
,, 2½ ,, 4½ ,, . . . = $\frac{1}{9}$
,, 1 ,, 2 ,, . . . = $\frac{1}{18}$

V. DOGS

From ½ to 1 year . . . . = 1
,, 3 ,, 6 months . . . = ½
,, 1¼ ,, 3 ,, . . . = ¼
,, 20 ,, 45 days . . . . = ⅛
,, 10 ,, 20 ,, ... = $\frac{1}{16}$

Doses of the most generally used drugs and medicines for animals

——	Horse	Pig	Dog
Acetanilidum . . .	ʒi.–ii.	gr. v.–x.	gr. ii.–v.
Acet. Opii . . .	℥i.–ii.	ʒi.–ii.	ʒ½–i.
Acid. Aceticum . . .	℥i.–ii.	ʒi.–ii.	ʒ½.–i.
,, Benzoic. . . .	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Boric. . . .	ʒii.–vi.	gr. x.–xxx.	gr. v.–xv.
,, Carbolic. . . .	gr. xv.–xxx.	gr. ii.–iii.	gr. i.–ii.
,, Hydrobrom. Dil. .	ʒi.–iv.	♏x.–xx.	♏v.–x.
,, Hydrochlor. Dil. .	ʒi.–iv.	♏x.–xx.	♏ii.–x.
,, Hydrocyanic. Dil. B.P. 2% . .	♏xx.–xxx.	♏iv.–xii.	♏ii.–v.
Scheele's, 4% . .	Half	these doses	
,, Lactic. . . .	ʒi.–ii.	♏v.–x.	♏v.
,, Nitric. Dil. (1–5) .	ʒi.–iii.	♏vii.–xx.	♏iii.–x.
,, Nitro - Hydrochlor. Dil. . . .	ʒi.–iii.	♏vii.–xx.	♏iii.–x.
,, Phosphoric. Dil. .	ʒi.–iii.	♏vii.–xx.	♏iii.–x.
,, Salicylic. . .	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Sulphuric. Dil. (1–12)	ʒi.–iii.	♏vii.–xx.	♏iii.–x.
,, Sulphuros. . .	ʒii.–vi.	♏x.–xxx.	♏v.–x.
,, Tannic. . . .	ʒ½–1	gr. vi.–xv.	gr. ii.–v.
Aconiti Pulv. . . .	gr. iii.–xv.	gr. ½–ii.	gr. ½
,, Tinct. (1–8) . .	ʒ½–1	♏iv.–xv.	♏ii.–v.
Adrenalin. Liq. . .	ʒi.–iv.	♏v.–xx.	♏v.
Æther (Sulphuric) .	℥i–ii.	ʒ½–iii.	♏xv.–ʒii.

—	Horse	Pig	Dog
Æther. Nitros. Spiritus	℥½–iii.	ʒ½–iii.	ʒ½–ii.
Alcohol (*see* Sp. Vini Rect.)	—	—	—
Aloes { Barbadensis Capensis Socotrinæ	ʒiii.–viii. Quarter these	ʒ1½–iv doses as stoma	ʒ¼–1 chic and tonic
Alum	ʒii.–℥i.	℈i.–ʒi.	gr. v.–xx.
Ammonii Benzoas	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Bromidum	ʒii.–vi.	gr. xv.–ʒi.	gr. v.–xv.
,, Carb.	ʒi.–iii.	gr. xx.–XL	gr. iii.–x.
Liq. Amm. Acet.	℥ii.–vi.	℥i.–ii	ʒii.–vi.
Spiritus Ammoniæ Aromat.	℥½–1½	ʒ½–1½	♏xv.–xxx.
Spiritus Ammoniæ Fœtidus	℥½–1½	ʒ½–1½	♏xv.–xxx.
Ammonii Chloridum	ʒii.–℥i.	ʒ½–ii.	—
Amylum Iodatum	℥½–ii.	ʒ½–ii.	gr. iii.–xxx.
Amyl Nitris (by inhalation)	ʒi.–iii. Half these	♏vii.–xx. doses inter	♏iii.–xv. nally
Anisi Oleum	♏xx.–ʒi.	♏iii.–x.	♏i.–iv.
,, Pulv.	℥½–i.	ʒi.–iv.	—
Anthemidis Flores	ʒi.–iv.	ʒ½–i.	gr. v.–xv.
Antimon. Nig.	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Tart.	ʒ½–i.	gr. iv.–xvi.	gr. i.–iv.
,, (as vermifuge)	ʒi.–ii.	—	—
Antipyrin.	ʒi–iii.	gr. v.–xv.	gr. ii.–v.
Apomorphin. Hydrochlor.	gr. ¼–½	gr. $\frac{1}{32}$–$\frac{1}{16}$	gr. $\frac{1}{32}$–$\frac{1}{12}$
Arecæ Nucis Pulv.	℥½–1	ʒ½–ii.	gr. xv.–ʒii.
Arecolin. Hydrobrom. (Hypoder.)	gr. ½–1½	gr. $\frac{1}{16}$–$\frac{1}{6}$	—
Argenti Nitras	gr. iv.–xii. Half these	gr. ½–1½ doses subcu	gr. ¼–¾ taneously
Arsenic. Alb.	gr. iii.–x.	gr. $\frac{1}{7}$–¾	gr. $\frac{1}{20}$–$\frac{1}{10}$
Liquor Arsenicalis (1–100) (Fowler's Solut.)	ʒii.–℥i.	ʒ½–ii.	♏v.–xx.
Liq. Arsen. et Hydrarg. Iodid. (Donovan's Solut.)	ʒii.–℥i.	♏xv.–XLV.	♏ii.–x.
Asafetidæ Gummi	ʒii.–vi.	gr. xv.–ʒi.	gr. v.–xx.
Atropinæ Sulphas	gr. i.–iii.	gr. $\frac{1}{15}$–$\frac{1}{5}$	gr. $\frac{1}{60}$–$\frac{1}{20}$
Barii Chloridum	ʒ½–ii.	gr. ii.–v.	gr. ⅓–i.
Belladonnæ (Folia) Tinct. (1–20).	℥½–1½	♏xv.–xxx.	♏v.–xx.
Extract.	ʒ½–1½	gr. ii.–vi.	gr. ½–iii.
Benzoin. Tinct.	℥½–i.	♏xx.–XL.	—
Bismuthi Carbonas	ʒi.–iv.	℈i.–ʒi.	gr. iii.–xv.
,, Salicylas	ʒi.–iv.	℈i.–ʒi.	gr. iii.–xv.
,, Subnitras	ʒi.–iv.	℈i.–ʒi.	gr. iii.–xv.

—	Horse	Pig	Dog
Boracis Pulv. . . .	ʒii.–vi.	gr. xv.–XLV.	gr. vii.–xx.
Buchu Infusum . . .	℥ii.–iv.	ʒi.–℥i.	ʒ½–ii.
Caffeinæ Citrat. . .	ʒi–ii.	gr. x.–xv.	gr. v.
Cajuputi Oleum . .	ʒ½–ii.	♏v.–xv.	♏v.
Calcii Carb. Præcip. . .	℥i.–ii.	ʒi.–ii.	ʒ½–i.
,, Chloridum . .	ʒ1½–v.	gr. x.–XLV.	gr. v.–xx.
,, Hypophos. . .	ʒi.–iii.	gr. v.–xx.	gr. v.
,, Phosphas . . .	ʒ1½–iii.	gr. x.–XLV.	gr. v.–xx.
,, Sulphidum . .	gr. x.–LX.	gr. ii.–v.	gr. ii.
Calcis Liquor . . .	℥iv.–vi.	℥½–ii.	ʒi.–iv.
Calumbæ Radicis Pulv. .	ʒii.–v.	gr. xv.–ʒi.	gr. vii.–xx.
Tinct. (1–8) . . .	℥i.–ii.	ʒi.–ii.	ʒ½–1
Cambogia	ʒi.–℥½	gr. x.–xx.	gr. v.–x.
Camphora	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
Camphor. Monobrom. .	ʒi.–iv.	gr. v.–xv.	gr. v.
Cannabis Indicæ Extract.	ʒ½–1½	gr. ii.–xv.	gr. ½–iii.
Cantharidis Pulv. . .	gr. v.–x.	gr. i.–iv.	gr. ¼–i.
Capsici (Fructus) Pulv. .	gr. x.–xx.	gr. i.–v.	gr. ½–ii.
Carb. Ligni . . .	℥½–1½	ʒ½–1½	gr. xv.–ʒi.
Cardamom. (Sem.) Pulv. .	ʒii.–vi.	gr. xv.–ʒi.	gr. vii.–xx.
Tinct. Comp. (1–80) .	℥i.–iii.	ʒi.–ii.	ʒ½–1½
Caryophylli Pulv. . .	ʒii.–vi.	gr. xv.–ʒi.	gr. vii.–xx.
Oleum	♏xx.–ʒi.	♏iii.–x.	♏i.–iv.
Cascara Sag. (Ext. Liq). .	ʒii.–℥i.	♏xx.–LX.	♏xx.
Catechu Pulv. . . .	ʒii.–iv.	gr. xv.–ʒ½	gr. vii.–xx.
Chloralamidum . . .	℥i.–ii.	ʒi.–ii	gr. x.–xxx.
Chloral Hydras . . .	ʒii.–℥i.	gr. xv.–ʒi.	gr. iii.–xx.
Chlorodynum . . .	ʒi.–iii.	♏vii.–xxx.	♏iii.–xv.
Chloroform. . . .	ʒi.–ii.	♏vii.–xx.	♏iii.–x.
Spirit. Co. (1–19) . .	℥i.–iii.	ʒi.–iii.	ʒ½–1½
Cinchonæ (Cort.) Pulv. .	℥½–1½	ʒ½–ii.	gr. xv.–ʒi.
Tinct. (1–5) . . .	℥i.–iii.	ʒi.–iii.	ʒ½–1½
Cinchonidinæ Sulphas .	gr. xv.–XLV.	gr. ii.–x.	gr. i.–v.
Cinchoninæ Sulphas . .	ʒ½–i.	gr. iv.–xii.	gr. ii.–vi.
Cinnamomi Cort. . .	ʒii.–iv.	gr. xv.–ʒi.	gr. vii.–xx.
Cocainæ Hydrochlor. . .	gr. v.–x.	gr. ½–i.	gr. ⅛–½
Codeina	gr. xv.–XLV.	gr. ii.–vi.	gr. ¼–i.
Colchici Seminum Pulv. .	ʒ½–ii.	gr, iv.–xx.	gr. ii.–vi.
Colocynth. Pulp. . .	ʒi.–iii.	gr. x.–xx.	gr. v.
Conii Extract. . . .	ʒi.–iii.	gr. iv.–x.	gr ¼–iii.
Coniinæ Hydrochlor. . .	gr. ½–i.	gr. ⅒	gr. $\frac{1}{16}$
Copaiba	℥i.–ii.	ʒi.–ii.	♏v.–xxx.
Creosotum . . .	♏xv.–ʒi.	♏ii.–x.	♏i.–iv.
Creta Præparata . . .	℥½–1½	ʒ½–1½	gr. v.–ʒ½
Croton. Chlor. Hydrat. .	ʒii.–iv.	gr. x.–xx.	gr. v.–x.
Crotonis (Semina) Pulv. .	ʒ½–i.	gr. iv.–x.	gr. ii.–x.
,, Oleum . .	♏x.–xxx.	♏i.–iii.	♏½–ii.

—	Horse	Pig	Dog
Cumini (Fructus) Pulv.	℥½–1½	ʒ½–1½	gr. xv.–XL.
Cupri Sulphas *tonic*	ʒ½–ii.	gr. iv.–x.	gr. i.–iii.
emetic	—	gr. x.–xxx.	D. gr. iv.–x. C. gr. i.–iii.
Damianæ Ext. Liq.	℥ ½–i.	ʒ½–i.	♏xv.–xx.
Daturina	gr. ½–i.	gr. 1/16–⅛	gr. 1/32
Digitalinum	gr. ¼–½	gr. 1/32	gr. 1/60
Digitalis Folia	gr. xv.–ʒi.	gr. ii.–x.	gr. i.–iii.
Tinct. (1–8)	ʒ1½–v.	♏x.–xxx.	♏v.–xx.
Diuretinum	ʒii.–iv.	gr. xx.	gr. x.
Elaterinum	gr. ½–ii.	gr. 1/16	gr. 1/20
Emetina	gr. ½–ii.	gr. 1/16	gr. 1/20
Ergota	ʒii.–iv.	gr. xv.–xxx.	gr. ii.–x.
,, Extract. Liq.	ʒi.–iv.	♏x.–xx.	♏ii.–x.
Eserini Sulph. Hypoderm.	gr. i.–1½.	gr. 1/10–1/20	gr. 1/100
Fel Bovinum Purificatum	ʒ½–ii	gr. v.–xv.	gr. ii.–vi.
Ferri et Ammonii Citras	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, et Quininæ Citras	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Perchloridi Liq. Fort.	ʒ½–1½	♏iv.–xx.	♏ii.–x.
,, Phosphas	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Quininæ et Strychninæ (Easton's Syr.)	℥½–ii.	ʒi.–ii.	♏x.–ʒi.
,, Sulphas	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
Ferrum Redactum	ʒi.–ii.	gr. v.–x.	gr. v.
Filicis Maris Pulv.	℥ii.–iv.	℥½–1½	ʒii.–vi.
,, Extract. Liquidum	℥½–1½	ʒ½–ii	♏xv –xxx.
Fœniculi (Fructus) Pulv.	℥½–1½	ʒ½–ii.	gr. xv.–ʒi.
Fœnugræci (Sem.) Pulv.	℥½–1½	ʒ½–ii.	gr. xv.–xxx.
Gallæ Pulv.	ʒii.–iv.	ʒ½–1½	gr. iv.–x.
Gentianæ (Radicis) Pulv.	ʒii.–℥i.	gr. xv.–ʒi.	gr. vii.–xx.
,, Tinct. Comp.	℥i.–ii.	ʒi.–ii.	ʒ½–1½
Glycerinum	℥ii.–v.	ʒii.–v.	ʒi.–iii.
Glycyrrhizæ (Radicis) Pulv.	℥½–1½	ʒ½–1½	gr. xv.–ʒi.
Hamamel. Ext. Liquid.	℥i.–ii.	ʒi.–ii.	ʒ½–i.
Heroin. Hydrochlor.	gr. ½–ii.	gr. 1/10–⅕	gr. 1/30–1/10
Homatropin. Hydrochlor.	gr. iii.–vi.	gr. ⅓	gr. ⅕
Hydrarg. Iodid. Rub.	gr. ii.–iv.	gr. ¼–i.	gr. 1/16–¼
,, Iodid. Vir.	gr. xv.–ʒi.	gr. ii.–viii.	gr. ½–ii.
,, Perchloridum (Corrosive Sublimate)	gr. ii.–vi.	gr. ⅛–½	gr. 1/32–⅛
Hydrarg. Subchlor. (Calomel)	ʒ½–i.	gr. i.–iv.	gr. i.–iv.
,, c. Cretâ	—	—	gr. iii.–x.
Hydrargyri Pilula	ʒi.–iii.	gr. v.–xv.	gr. ii.–v.
Hydrastini Hydrochlor.	gr. i.–ii.	gr. ⅛	gr. 1/12
Hydrastin. Resinoid	gr. x.–xx.	gr. ½–1	gr. ⅓
Hydrastis Ext. Liq.	ʒii.–℥i.	ʒ½–i.	♏x.
Hydrogen. Peroxid. Liquor.	℥½–ii.	♏x–ʒi.	♏v.–ʒi.
Hyoscinæ Hydrobrom.	gr. 1/20–1/10	gr. 1/80	gr. 1/150

—	Horse	Pig	Dog
Hyoscyami (Folia) Extract.	ʒ1½-iii.	gr. vi.-xx.	gr. ii.-x.
Hyoscyami Tinct. (1-8) .	℥ii.-iv.	ʒi.-iii.	♏xv.-ʒi.
Hyoscyaminæ Hydrobrom. .	gr. i.-ii.	gr. $\frac{1}{30}$	gr. $\frac{1}{60}$
Ichthyol.	ʒi.	gr. v.-x.	gr. ii.-v.
Iodoform. . . .	ʒ½-i.	gr. v.	gr. ii.-v.
Iodum	ʒ½-ii.	gr. iii.-x.	gr. ½-ii.
Ipecacuanhæ Pulv. .	ʒ½-1½ — —	gr. iv.-xx. (Emetic) gr. xx.-xxx.	gr. i.-v. (Emetic) gr. x.-xxx.
,, Vinum 1-20)	— — — —	— — — —	(Expect.) ♏x.-xxx. (Emetic) ʒii.-v.
Jaborandi Ext. Liquid. .	ʒii.-iv.	♏x.-ʒi.	♏v.-ʒ½
Jalapæ Pulv. . . .	—	ʒi. -iii.	ʒ½-1½
Juniperi Empyreum Oleum (Huile de Cade) . .	ʒ½-ii.	♏iv.-xv.	♏ii.-iv.
Juniperi Fructus . .	℥i.-ii.	ʒii.-iv.	—
Kamala	℥i.-ii.	ʒi.-ii.	ʒi.-ii.
Kino Pulv. . . .	ʒi.-iii.	gr. vii.-xx.	gr. ii.-x,
Kousso	℥½-ii.	ʒ½-ii.	℥½-ii.
Krameriæ Extract. . .	ʒii.-iv.	gr. x.-xx.	gr. v.-x.
Lini Oleum . . .	O½-1½	℥ii.-vi.	℥i.-ii.
Lithii Bromidum, Carb., etc.	℥½-i.	gr. x.-ʒ½	gr. v.-xx.
Lobeliæ Ext. Liq. . .	ʒi.-iv.	♏x.-xx.	♏v.-x.
Lupulin.	ʒi.-iii.	gr. x.-xx.	gr. v.-x.
Magnesii Carb. . .	ʒi.-v. (Foals and calves) Twice these	gr. x.-XLV. — doses as	gr. x.-xx. — laxatives
,, Sulphas . .	℥xvi.-xx.	℥½-i.	ʒi.-iii.
Manganesii Dioxidum .	ʒ½-ii.	gr. v.-x.	gr. ii.-v.
Maticæ Ext. Liquid. .	℥½-i.	♏x.-ʒss.	♏v.-xii.
Menthæ Piperitæ Aqua .	Oi.-ii.	℥ii.-v.	℥i.-ii.
Menthol	gr. x.-xx.	gr. ii.-v.	gr. i.-iii.
Methylene Blue. . .	gr. xv.-ʒi.	gr. v.-xv.	gr. ii.-v.
Morphinæ Acetas . .	gr. iv.-x.	gr. ½-1½	gr. ⅛-¼
,, Hydrochlor. .	gr. iv.-x.	gr. ½-1½	gr. ⅛-1½
Morrhuæ Oleum . .	℥ii.-viii.	℥i.-ii.	ʒii.-℥i.
Naphthalinum . . .	ʒii.-iv.	gr. v.-xv.	gr. ii.-x.
Naphthol. Beta . . .	ʒii.-i i.	gr. iii.-x.	gr. i.-v.
Nicotina	gr. $\frac{1}{60}$-$\frac{1}{10}$	gr. $\frac{1}{50}$	gr. $\frac{1}{100}$
Nitroglycerin. Sol. (1 p.c.) .	ʒ½-i.	♏v.	♏i.-ii.
Nucis Vom. Pulv. . .	ʒ½-ii.	gr. iii.-v.	gr. i.-ii.
,, Vomicæ Tinct. .	ʒ½-1	ʒi.-ii.	♏v.-xx.
Olivæ Oleum . . .	Oi.-1½	℥ii.-vi.	℥i.-ii.
Opii Tinct. . . .	℥i.-ii.	ʒ½-ii.	♏x.-xxx.
Opium	ʒi.-ii.	gr. iv.-xx.	gr. ½-iii.

—	Horse	Pig	Dog
Paraldehydum . . .	℥½–ii.	ʒi.	ʒ½–i.
Pelletierinæ Tannas . .	ʒ½–i.	gr. v.–x.	gr. iii.–v.
Pepsinum	gr. xv.–ʒi.	gr. v.–xx.	gr. v.
Phenacetinum . . .	ʒii.	gr. xx.	gr. v.–x.
Phosphorus . . .	gr. ½–ii.	gr. $\frac{1}{15}$–$\frac{1}{10}$	gr. $\frac{1}{30}$–$\frac{1}{15}$
Picrotoxinum . . .	gr. $\frac{1}{6}$–$\frac{1}{3}$	gr. $\frac{1}{40}$	gr. $\frac{1}{60}$
Podophylli Resina . .	ʒ½–ʒi.	gr. ii.–v.	gr. i.–ii.
,, Rhizoma . .	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
Potassii Acetas . . .	℥½–i.	ʒi.–ii.	gr. x.–xx.
,, Bicarbonas . .	℥½–1½	ʒ½–1½	gr. xv.–XL.
,, Bichromas . .	gr. iii.–vii.	—	—
,, Bitartras . .	℥i.–iii.	ʒi.–iii.	ʒ½–1½
,, Bromidum . .	ʒii.–vi.	gr. xv.–ʒi.	gr. vii.–xx.
,, Chloras . .	ʒi.–iii.	gr. x.–xxx.	gr. v.–xv.
,, Citras . . .	℥½–i.	ʒi.–ii.	gr. x.–xx.
,, Iodidum . .	ʒ½–vi.	gr. iv.–xx.	gr. ii.–x.
,, Nitras . . .	ʒii.–iv.	ʒ½–i.	gr. v.–x.
Quassiæ Ext. . . .	ʒi–ii.	gr. i.–iv.	gr. ½–iii.
Quininæ Sulphas . .	℈i.–v.	gr. ii.–x.	gr. i.–v.
Resorcinum . . .	ʒi.–ii.	gr. ii.–v.	gr. i.–iii.
Rhei Radix . . .	℥½–i.	ʒi.–ii.	gr. xv.–xxx.
,, Tinctura (1–10) . .	℥ii.–v.	ʒii.–v.	ʒi.–ii.
Ricini Oleum . . .	O½–1½	℥i.–iii.	℥½–1½
Salicinum	ʒi.–iii.	gr. vii.–xxx.	gr. iii.–xv.
Salol	gr. xv.–ʒii.	gr. ii.–x.	gr. i.–v.
Santoninum . . .	gr. xv.–XL.	gr. ii.–x.	gr. i.–v.
Saponinum . . .	gr. ii.–iv.	gr. ¼–½	gr. $\frac{1}{6}$–¼
Scammoniæ Resina . .	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
,, Gummi . .	ʒi.–iii.	gr. vii.–xx.	gr. iii.–x.
Scillæ Pulv. . . .	ʒ½–1½	gr. iv.–x.	gr. ii.–v.
,, Acetum (1-8) . .	℥½–i.	ʒ½–i.	♏xv.–xxx.
Scoparina	gr. v.–xv.	gr. ½–ii.	gr. ¼–i.
Scopolaminæ Hydrobrom. (hypoderm.) . . .	gr. $\frac{1}{20}$–$\frac{1}{10}$	gr. $\frac{1}{100}$	gr. $\frac{1}{200}$
Senna	℥iv.	ʒi.–vi.	ʒj.–iv.
Sennæ Ext. Liq. . .	℥iv.	ʒi.–vi.	ʒi.–iv.
Sodæ Liquor . . .	℥½–ii.	ʒ½–ii.	♏xv.–xxx.
Sodii Bicarbonas . .	℥½–i.	℥½–1½	gr. xv.–XLV.
,, Bromidum . .	ʒii–vi.	gr. xv.–ʒi.	gr. v.–xx.
,, Chlorid. . . .	℥i.–ii.	ʒi.–iii.	gr. x.–xxx.
,, Hypophosphis . .	℥½–i.	gr. xv.–xx.	gr. x.–xx.
,, Hyposulphis . .	℥½–1½	ʒ½–1½	gr. xv.–XLV.
,, Salicylas . . .	ʒii.–iv.	gr. xv.–xxx.	gr. vii.–xx.
,, Sulphas . . .	lb. ½–i. (Cathartic for cattle) ℥xii.–xxiv.	℥i.–iii. (Cathartic for sheep) ℥i.–iii.	ʒ½–1½ (Emetic) ʒi.–ii.
Sparteinæ Sulphas . . .	gr. v.–xx.	gr. ¼–ii.	g r. $\frac{1}{10}$–i.

——	Horse	Pig	Dog
Spirit. Vini Rect. . .	ʒvi.–x.	ʒi.–iii.	ʒi.–1½
Stramonii Extract. Liq. .	gr. x.–ʒi.	♏x.	♏i.–v.
Strontii Bromidum . .	℥i–ii.	gr. x.–ʒi.	gr. x.–xL.
,, Iodidum. . .	℥½–i.	gr. v.–xv.	gr. v.–xx.
Strophanthi Tinctura . .	ʒ½–ii.	♏v.–xx.	♏ii.–x.
Strychnina . . .	gr. ½–iii.	gr. ⅛–½	gr. $\frac{1}{120}$–$\frac{1}{40}$
Strychninæ Liquor . .	ʒii.–vi.	ʒ½–ii.	♏iii.–x.
Sulphonal	ʒi.–iv.	ʒ½–i.	gr. v.–xx.
Sulphuris Iodidum . .	gr. viii.–xx.	gr. i.–iii.	gr. ¼–i.
Sulphur Sublimat. . .	℥i.–iv.	℥½–ii.	ʒ½–iv.
Terebenum . . .	ʒii.–vi.	♏x.–xxx.	♏v.–xv.
Terebinthina Canadensis .	℥½–ii.	ʒi.–ii.	♏xv.–ʒi.
,, Oleum . .	℥½–ii.	ʒ½–i.	♏xv.–XLV.
	(Twice these	doses are	anthelmintic)
,, Veneta . .	℥½–ii.	ʒ½–ii.	♏xv.–ʒi.
Thiosinaminum . . .	ʒ½–i.	gr. v.–x.	gr. iii.–vi.
Thymol	ʒ½–ii.	gr. v.–xv.	gr. i.–x.
Trional	ʒi.–iv.	gr. xv.–ʒi.	gr. x.–xxx.
Urethanum . . .	ʒi.–iv.	gr. xv.–ʒi.	gr. x.–xx.
Urotropinum . . .	ʒi.–iv.	gr. xv.–ʒi.	gr. x.–xx.
Valerianæ Radix . .	℥½–ii.	ʒ½–ii.	gr. xv.–ʒi.
,, Tinctura (1–8) .	℥½–1½	ʒ½–1½	♏xv.–XLV.
Veratrina	gr. i.–iii.	gr. ⅛–½	gr. $\frac{1}{16}$–$\frac{1}{10}$
Veratrum Album .	℥½–1	gr. iv.–xii.	gr. ii.–v.
	(as sedative)	—	—
	gr. xx.–xxx.	—	—
Zinci Acetas . .	ʒ½–i.	gr. iv.–x.	gr. i.–iii.
	—	—	(Emetic)
	—	—	gr. x.–xx.
,, Bromidum . .	ʒ½–i.	gr. iv.–x.	gr. i.–iii.
,, Phosphidum . .	gr. ½–ii.	gr. $\frac{1}{20}$	gr. $\frac{1}{40}$
,, Sulphas . .	ʒi.–ii.	gr. x.–xx.	gr. ii.–v.
	—	(Emetic)	(Emetic)
	—	gr. xxx.–L.	gr. viii.–xv.
Zingiberis Pulv. . .	ʒii.–℥i.	gr. xv.–ʒi.	gr. vii.–xx.
,, Tinctura (1–8) .	℥½–1½	ʒ½–1½	♏xv.–xx.

MISCELLANEOUS VETERINARY FORMULÆ

THE following have been contributed at various times to *The Chemist and Druggist* and *The Chemist and Druggist of Australasia.*

ALTERATIVE POWDER FOR CATTLE.

Pulv. Potass. Nit.	℥j.
Antimon. Sulph. Nig.	℥j.
Pulv. Resinæ	℥j.
Sulphur. Sublim.	℥ij.

Misce et div. in pulv. viij.

APPETISING POWDER FOR HORSES.

Cream of Tartar	℥j.
Black Antimony	ʒvj.
Common Salt	℥iv.
Powdered Gentian	℥iv.
,, Juniper Berries	℥iv.
,, Caraway	℥j.
,, Mustard Seed	℥j.
Oatmeal	℥ij.

Mix.

Dose.—A tablespoonful with each feed thrice daily.

ASTHMA CURE FOR CANARIES.

Tr. Capsici	℥j.
Spt. Chloroformi	ʒij.
Ferri Ammon. Cit.	ʒj.
Aq. Fœniculi ad	℥vj.

M.

A few drops to be put on a lump of sugar in the cage every day.

BARBED-WIRE FENCE LINIMENT

Raw Linseed Oil	℥xvj.
Saltpetre	℥j.
Lead Acetate	℥j.
Sulphuric Acid	℥j.
Carbolic Acid	℥ss.

Mix the oil with the saltpetre and lead acetate, and slowly add the sulphuric acid, stirring continually; when cold pour off from the dregs, and add the carbolic acid. Apply with a feather twice a day. Do not wash the sore at all.

BARBED-WIRE FENCE LOTIONS.

I.

Copper Sulphate	℥j.
Iron Sulphate	℥j.
Zinc Sulphate	℥ss.
Alum	℥ss.
Water	℥xvj.

Dissolve.

Apply twice a day with a sponge.

II.

Linseed Oil	℥vij.
Oil of Thyme	℥ss.
Sulphuric Acid	℥ss.

Mix.

BLACK-LEG AND BLACK-QUARTER DRAUGHT FOR COWS.

Sodii Sulphitis	ʒj.
Sodii Salicylat.	ʒj.
Aq.	℥ij.

Solve.

To be given every six hours.—(*Cresswell.*)

BLISTERING OINTMENTS.

I.

Pulv. Cantharid.	℥xv.
Pulv. Euphorbii	℥v.
Ol. Olivæ Comm.	℥xx.
Ol. Terebinth.	℥xij.

Digest for 24 hours, then add

Ceresini	℥xx.
Resin. Flav.	℥v.

melted by the heat of water-bath, and stirred until creamy.

II.

Pulv. Cantharid.	ʒv.
Ol. Morrhuæ Sec.	℥viij.
Gum. Thus	℥iij.
Ceræ Flav.	℥ij.
Vaselin. Vet.	℥xij.

Put the cantharides and the cod-liver oil on the hob all day, stirring occasionally; then melt the last three ingredients together and strain into the cantharides mixture; stir well and add

Ol. Origani	℥ss.

III.

Pulv. Cantharidis	℥xx.
Ol. Terebinth.	℥xij.
Acid. Acet. Fort.	℥ix.
Lanolini	℔iiss.
Vaselini	℔iiss.

Mix the first three, and allow to stand for twenty-four hours; then add the lanoline and vaseline, melted on a water-bath, and mix well, stirring until cold.

IV.

Pulv. Canthar.	℥j.
Camphor	ʒij.
Pulv. Resin.	℥j.
Ol. Olivæ	℥j.
Ceræ Flav.	℥j.
Adipis	℥iij.

Digest all the ingredients except the camphor in a water-bath for two or three hours with occasional stirring; then strain the ointment, add the camphor and stir till cold.

(*Label.*)

HORSE BLISTER, as approved by leading veterinary surgeons. Of all the preparations for blistering horses, this compound is the most highly esteemed, being certain in action, curative, and thoroughly reliable. The blister may be used for sprains, thickened tendons, wind-galls, soft enlargements, and in all cases where the use of a vesicant is indicated by the veterinary attendant.

Directions.—Spread the ointment upon a linen cloth and apply to the affected part, allowing it to remain on all night; then dress with hog's lard.

This label is also suitable for Ung. Hydrarg. Iod. Rub.

BLISTERING TINCTURES.

I.

Cantharides, Powd.	℥iss.
Camphor	℥j.
Cochineal	gr. x.
Spirit	a sufficiency

Macerate in ℥vij. of spirit for a week, strain, press, and filter, washing the marc with more spirit to make ℥viij.

II.

Cantharides	℥iij.
Euphorbium Resin	℥iss.
Amyl Acetate	℥x.
Spirit to	℥xx.

Macerate for four days, filter, and wash the marc with spirit to 1 pint.

BRAN MASH.

Scald a stable bucket, throw out the water, put in three pounds of bran and an ounce of salt, add two and a half pints of boiling water, stir well up, cover over, and allow the mash to stand for fifteen or twenty minutes, until it is well cooked.—(*Hayes.*)

LINSEED TEA.—Boil one pound of linseed in two gallons of water slowly.

Mashes are used as vehicles for many of the less pungent medicaments; most horses being willing to eat them with the usual alterative and condition powders, and with pot. nit. and flor. sulph.

BROKEN WIND IN HORSES.

Pulv. Antim. Nig.	ʒiij.
Pulv. Fol. Aconiti	ʒiij.
Pulv. Resinæ	℥j.
Pulv. Glycyrrh.	℥j.

Mix and divide into six powders.

BRONCHITIS POWDERS FOR HORSES.

Pulv. Nucis Vom.	℥j.
,, Cupri Sulphat.	℥j.
,, Acidi Arseniosi	℈j.

M. et div. in pulv. xij.

One powder to be given every night and morning.

BULL-BURNT REMEDY.

Pot. Nit.	ʒiv.
Pot. Bicarb.	℥ij.
Mag. Sulph.	℥xiij.

M. Ft. haust. Bis terve
die ex aquâ.

A cooling diet should be given, and an injection into the vagina—

Zinci Sulph.	gr. x.
Aq. Dest. ad	Oj.

Sæpe utendum.

CALF-MEAL OR MILK SUBSTITUTE.

Freshly Ground Linseed	7 lb.
Barley Meal	14 lb.
Wheat Meal	14 lb.

Mix.

A small quantity is made into a thin paste with cold water, then boiling water is poured upon it.

CALVING-DRENCH.

Pulv. Ergotæ	ʒj
Pulv. Aloes	ʒj.
Pulv. Zingib.	℥j.
Pulv. Curcumæ	℥j.
Mag. Sulph.	℥xij.

M.

To be given in a quart of hot ale or thin gruel within two hours after calving.

CANADIAN OIL.

Spirit of Tar	℥j.
Paraffin Oil to	℥viij.

Mix.

This mixture is reputed in Canada to remove dandruff and dirt, leave the skin soft, white, and clean; to cure the worst case of mange in the world, keep the hair soft and silky, stop all irritation and rubbing, to be useful as a preventive against flies, destructive to lice, to take stains out of white horses, and keep black horses from fading out.

CARBUNCLE POWDER FOR COWS.

Pulv. Nuc. Vom.	℈ij.
Ammon. Carb.	ʒij.
Ferri Peroxid.	ʒij.
Pulv. Gentian.	℥j.

M.

To be given in a pint of water twice daily.—(*Cresswell.*)

CASTRATION OIL.

Gum. Benzoini	℥j.
Acid. Carbolic.	℥j.
Rad. Anchusæ	℥ss.
Ol. Olivæ	Oj.

Digest for several days in a warm place, and strain.

CASTRATION OINTMENT FOR LAMBS.

Terebinth. Venet.	℥j.
Adipis Præparat.	℥j.
Ol. [illegible]	Oj.

Cupri Subacetatis q. s. ad color.

Melt the first two ingredients, add the others, and stir till cold.

CASTRATOR'S GREEN OINTMENT.

Cupri Acetat.	℥iij.
Terebinth. Venet.	℥ij.
Adipis	℥x.

Ft. ung. s.a.

CATTLE CANCER OINTMENT.

Acid. Arsenios.	ʒj.
Pulv. Calaminæ	℥j.
Adipis	℥ij.

Ft. ung.

CATTLE FOODS AND SPICES.

I.

Ground locust beans, 50; linseed cake, 50; coarsely ground liquorice, 5; gentian, 1; fenugreek, 3; and cumin, 1.

II.

Aniseed, allspice, cumin, ginger, liquorice, turmeric, of each equal parts.

III.

Fenugreek, 500; juniper berries, 100; fennel seed, 80; linseed, 150; bicarbonate of soda, 100; gentian, 100; ginger, 100; common salt, 50; sulphate of soda, 100; asafetida, 5 parts. Mix the whole, after powdering, and sift. A tablespoonful is the dose.

IV.

Ground Linseed-cake	1 cwt.
Locust Meal	56 lb.
Bran	40 lb.
Common Salt	2 lb.
Sulphate of Iron	1 lb.
Black-pepper Gruffs	2 lb.
Fenugreek	2 lb.

Mix thoroughly.

Nos. I. and IV. are foods; Nos. II. and III. are condiments.

V. (AUSTRALIAN).

Nourishing Drench for Cow.

Powdered Turmeric	2 lb.
Powdered Anise	2 lb.
Farina	4 lb.

Make a powder, and divide into 4-oz. quantities. Give one in 2 pints of gruel.

CHESHIRE RED BOTTLE.

P. Boracis	℥xij.
P. Potass. Nit.	℥viij.
Tinct. Opii	℥vj.
Spt. Camphor	℥x.
Ras. Santal. Rub.	℥ij.
Ol. Origani	℥ij.
Tr. Capsici	℥iv.
Aq. Ferv.	Cong. j.

Misce.

Allow to stand a day or two, and filter.

(*Label.*)

THE FAMOUS CHESHIRE BOTTLE.

The properties and doses of this highly prized medicine are as follows:—

For a Cow Blown or Hoven.—Two wineglassfuls in a pint of mint tea, hot.

Red Water or Black.—Two wineglassfuls in a pint of warm milk or whey.

Bloody Urine.—Two wineglassfuls in a pint of linseed oil.

Diarrhœa or Scouring.—Three wineglassfuls in a pint of milk, previously boiled with a little flour.

Fellon Cold or Influenza.—Three wineglassfuls in a pint of warm treacle-water.

Colic or Gripes in Cow or Horse.—Quarter-pint in a pint of hot water with a wineglassful of turpentine, rubbing the loins with the same.

Garget or Downfall (Gorgle) in Udder.—Apply the Cheshire Bottle warm.

Milk Fever.—Quarter-pint with one ounce of alum in a quart of barley-water.

Diarrhœa or Dysentery (Gurr) in Calves.—A large tablespoonful (first dose) with one ounce of castor oil in half-pint new milk; (second dose) in half-pint new milk and half-ounce chalk.

CHLORODYNE (VETERINARY).

Extract of Indian Hemp	ʒij.
Capsicin	gr. v.
Oil of Peppermint	ʒiss.
Rectified Spirit	℥ij.

Rub up the extract and capsicin with a little spirit, and gradually add the rest of the latter; then add the oil and the following:—

Methylated Chloroform	℥i.
Methylated Ether	℥j.

Mix.

Separately prepare the following mixture:—

Acetate of Morphine	ʒj.
Dilute Acetic Acid	ʒiss.
Distilled Water	℥iv.

Dissolve by heat, and add to

Comp. Tragacanth Powd.	ʒiij.
Treacle	℥x.
Liquid Ext. of Liquorice	℥ij.

To this mixture gradually add the chloroformic solution, shaking well after each addition.

The dose of this preparation for a horse is ℥ss. to ℥j. Ten minims of acid. hydrocyanic. dil., B.P., may be added to each ounce if desired.

Cleansing-drench for Cow.

Pulv. Camphoræ	ʒj.
Pulv. Ergotæ	ʒj.
Pulv. Zingiberis	℥j.
Pulv. Potass. Nitrat.	℥ss.
Magnes. Sulphatis	℥xvj.

Mix with a quart of warm water, and give as one dose.

Colchicum Poisoning.

Cresswell recommends the following draught to be administered in a pint of gruel to cows every four hours for three or four successive times:—

Solution of Ammonia	℥ij.
Brandy or Whisky	℥iv.

Mix.

Colic Draughts for Horses.

I.

Spt. Æther. Nit.	℥j.
Tinct. Opii	℥j.
Tinct. Aconiti	♏xx.

To be given in a pint of water, and repeated, if necessary, in half an hour.

II.

Opii	ʒj.
Spt. Æther. Nit.	℥ij.
Chloroformi	ʒij.
Aq. ad	℥vj.

Rub down the opium with some of the water, dissolve the chloroform in the spirit; add, and make up to 6 oz.

For one dose; to be mixed with as much water.

III. *For Simple Colic.*

Chlorodyni	℥ij.
Spt. Æther. Nit.	℥ij.
Ol. Lini	Oj.

M.

Give at one dose, and repeat in two hours, if necessary.—(*Hoare.*)

IV. *For Flatulent Colic.*

Creolin	℥ss.
Ol. Terebinth.	℥ij.
Spt. Ammon. Arom.	℥ij.
Tinct. Asafetidæ	ʒij.
Ol. Lini	Oiss.

M.

For one dose.—(*Hoare.*)

V. *For Colic and Inflammation.*

Æther. Rect.	℥ss.
Tinct. Opii	ʒvj.
Spt. Ammon. Arom.	℥j.
Tinct. Asafetidæ	℥ss.
Ol. Lini ad	Oss.

Give at one dose, and repeat in one hour if necessary.

CONDITION POWDER FOR CATTLE.

Magnes. Sulphat.	℥xiij.
Pulv. Anisi	℥j.
Pulv. Zingiberis	℥j.
Pulv. Gentianæ	℥j.

Misce.

CONDITION POWDERS FOR HORSES.

I.

Nitre	℥iv.
Sulphur	℥iv.
Powdered Gentian	℥j.
Powdered Fenugreek	℥j.
Powdered Liquorice	℥iv.

Mix.

A tablespoonful for a dose.

II.

Pulv. Gentianæ	℥ij.
Pulv. Zingib.	℥ij.
Pulv. Fœnugræc.	℥ij.
Pulv. Glycyrrhiz.	℥ij.
Pulv. Pot. Nit.	℥ij.

M. et div. in pulv. xij.

One morning and evening.

III.

Sulphur.	℔j.
Pulv. Glycyrrhiz.	℥xij.
Pulv. Pot. Nit.	℥viij.
Pulv. Antim. Nig.	℥v.
Pulv. Anisi	℥ij.
Pulv. Nucis Vom.	℥ij.

M.

A tablespoonful for a dose.

IV.

Sulphur. Sublim.	℥iv.
Pot. Nit.	℥iij.
Antim. Sulph.	℥j.

One powder is given in the mash two or three times a week during the winter season.

V.

Pulv. Pot. Nit.	℥ij.
Pulv. Resin.	℥j.
Pulv. Santali Rub.	℥j.
Pulv. Fœnugræc.	℥j.
Pulv. Glycyrrh.	℥ij.
Pulv. Lini Placent.	℥v.

The dose of the mixed powder is a tablespoonful.

VI.

Potass. Nitrat.	℥viij.
Pulv. Gentian.	℥viij.
Pulv. Antim. Nig.	℥viij.
Pulv. Glycyrrh.	℥viij.
Pulv. Anisi	℥iv.
Pulv. Fœniculi	℥iv.
Pulv. Carui	℥ij.

Misce.

VII.

Sod. Chlorid.	℥iv.
Lini Cont.	℥iv.
Pulv. Resinæ	℥ij.
Pulv. Fœnugræc.	℥j.
Pulv. Zingiberis	℥ss.
Pulv. Anisi	℥j.
Ferri Sesquioxid.	℥ij.

Misce.

The dose of either VI. or VII. is one tablespoonful night and morning.

VIII.

Pulv. Cort. Cinchonæ	℥j.
Sulph. Sublim.	℥j.
Sod. Sulphatis	℥iv.
Pot. Nitrat.	℥j.
Pulv. Gentian.	℥iv.
Pulv. Fœnugræc.	℥ij.
Pulv. Glycyrrh.	℥iv.

Misce.

IX.

Pulv. Anisi	℥ij.
P. Gentian.	℥ij.
P. Carui	℥j.
P. Zingib.	℥j.
P. Glycyrrh.	℥ij.
P. Lini	℥viij.

A tablespoonful for a dose.

X.

Pulv. Glycyrrh.	℥xij.
Pulv. Potass. Nit.	℥viij.
Sulph. Sublim.	℔j.
Pulv. Antim. Nig.	℥v.
Pulv. Anisi	℥ij.
Pulv. Nucis Vomicæ	℥ij.

Misce.

A tablespoonful with the food twice daily.

XI.

Antim. Sulphurat.	℥iv.
Potass. Nit.	℥viij.
Pulv. Fœnugræc.	℥viij.
Pulv. Gentian.	℥viij.
Pulv. Lini	℔j.

Misce.

A tablespoonful to be given for a dose.

Prize Medal Condition Powder.

Pulv. Gentianæ	℥iv.
Pulv. Pot. Nit.	℥j.
Sulphur. Subl.	℥iv.
Pulv. Zingib.	℥iv.
Pulv. Antim. Nig.	℥iv.
Pulv. Resin.	℥ij.
Pulv. Fœnugræc.	℥ij.
Pulv. Capsici	℥ij.
Pulv. Serpentarii	℥ij.
Pulv. Sodii Sulphat.	℥ix.
Pulv. Lini Placent.	℔j.

A small tablespoonful twice a day in the feed.

Tonic Condition Powder.

Pulv. Nucis Vom.	℥j.
Pulv. Ferri Sulph.	℥j.
Pulv. Gentianæ	℥iss.
Pulv. Aromat.	℥ss.

Mix and divide into twelve powders.

CONSTIPATION POWDERS FOR CATTLE (following Indigestion).

Pulv. Potass. Bitart.	℥iij.
Pulv. Potass. Nitrat.	℥iiss.
Pulv. Gum. Acac.	℥iij.

M. et div. in pulv. xij.

One three times a day in linseed tea.

COUGH BALLS FOR HORSES.

Pulv. Camphoræ	ʒss.
Pulv. Antim. Nig.	ʒss.
Pulv. Scillæ	ʒss.
Pulv. Digitalis	℈j.
Pulv. Zingib.	ʒj.
Pulv. Pot. Nit.	ʒij.
Mel.	q.s.

Make a ball.

One ball to be given morning and evening.

COUGH DRAUGHT FOR HORSES.

Oil of Anise	♏v.
Camphor	gr. xx.
Extract of Liquorice	ʒj.
Tincture of Opium	ʒiij.
Spirit	℥ss.
Water to	℥iij.

Dissolve the oil and camphor in the spirit, and add to the other ingredients, previously mixed well.

COUGH MIXTURE FOR DOGS.

Tr. Belladonnæ	℥ss.
Syr. Scillæ	℥ss.
Tr. Camph. Co.	℥j
Aq. ad	℥vj.

M.

Give two teaspoonfuls three times a day.—(*Hoare.*)

COUGH POWDERS.

I.

Useful in the simple coughs of horses depending on catarrh :—

Pulv. Camphoræ	ʒiij.
Potass. Chlorat.	℥iss.
Pulv. Fol. Belladon.	℥iss.
Pulv. Anisi	℥ij.

Div. in pulv. vj.

Give one twice a day in the food.

II.

For chronic cough in the horse :—

Pulv. Fol. Aconiti	ʒvj.
Pulv. Digitalis	ʒiv.
Arsenic. Alb.	gr. iv.
Pulv. Anisi	℥ss.

Div. in pulv. vj.

Give one every night in the food. (*Hoare.*)

III.

Powdered Liquorice	℥iv.
Powdered Aniseed	℥iv.
Bruised Linseed	℥vj.
Saltpetre	℥ij.
Oil of Aniseed	ʒj.

A tablespoonful for a dose.

CRACKED HEELS OINTMENT.

Zinci Oxidi	ʒj.
Acidi Carbol.	gr. x.
Adipis	℥j.

M. ft. ung.

COW POWDERS (FLEMING'S).

Pulv. Catechu	ʒj.
Pulv. Zingiberis	℥ss.
Pulv. Gentianæ	℥ss.
Pulv. Opii	ʒss.

Fiat pulv. pro dose.

COUNTER-IRRITANT IN ACUTE INFLAMMATION.

Spirit	℥x.
Spirit of Turpentine	℥x.
Solution of Ammonia	℥iv.
Oil of Origanum	℥ss.

Mix.

Apply every three hours.

CUD BALLS.

Pulv. Rad. Althææ	℥j.
Pulv. Rad. Glycyrrh.	℥j
Pulv. Gum. Acaciæ	℥j.
Pulv. Sal. Communis	ʒij.

Make a stiff mass with water, and cut to suitable sizes.

CURB LOTION.

Corrosive Sublimate	ʒj.
Potassium Iodide	ʒj.
Proof Spirit	℥j.

To be rubbed in at intervals of two or three days till applied eight to ten times.

DEVONSHIRE OILS.

Spirit of Turpentine	℥x.
Camphor	℥ss.

Dissolve, and add—

Solution of Ammonia	℥j.
Tincture of Opium	℥ss.

Put the product into a wine-bottle

and fill up with the following mixture :—

Soft Soap	℔j.
Boiling Water	Cong. j.
Armenian Bole	℥iss.

Mix. Label, 'Shake the bottle.'

DIAPENTE.

Gentian	℥iv.
Turmeric	℥iv.
Fenugreek	℥iv.
Ginger	℥iv.
Anise	ʒiss.
Cloves	ʒiss.
Caraway	℥iss.

Mix.

Australian.

Gentian	℥xij.
Mustard	℥vj.
Pimento	℥xvj.
Linseed	℥xxxij.
Turmeric	℥xij.
Armenian Bole	℥xviij.

All to be powdered and mixed.

DIARRHŒA OR SCOUR IN CALVES.

Powder.

Mag. Carb. Levis	℥xvj.
Pulv. Rhei	℥j.
Pulv. Glycyrrh. Co.	℥iv.
Pulv. Zingib. Com.	℥j.
Ferri Carb. Sacch.	℥ss.

M.

A teaspoonful thrice daily.

Mixture.

Corticis Quercûs	℥j.
Sodii Carb.	℈j.
Aq. Bullientis	Oj.

Infuse for an hour.

Dose.—Two tablespoonfuls night and morning.

Pulv. Ext. Hæmatox.	ʒiij.
Cretæ Præparat.	℥j.
Chlorodyni	ʒij.
Syrup. Zingib.	℥iss.
Aq. ad	℥xij.

M.

Dose.—Half a wineglassful every four hours.

DISTEMPER MASS.

Pulv. Saponis	ʒxv.
Pulv. Jalapæ	ʒx.
Pulv. Aloes	ʒv.
Pulv. Antim. Tart.	ʒj.
Pulv. Glycyrrh.	ʒxv.
Glycerin.	q.s. ut ft. massa

A piece weighing from 40 gr. to 60 gr. to be given for a dose once a week.

DISTEMPER MIXTURE.

Pot. Chlorat.	ʒij.
Liq. Ammon. Acet.	℥j.
Spt. Æther. Nit.	ʒij.
Tr. Hyoscyam.	ʒij.
Aq. ad	℥iv.

ʒj. ad ʒij. ter in die sumend.

DISTEMPER PILLS.

I.

Quin. Sulph.	gr. j.
Pulv. Ipecac.	gr. $\frac{1}{8}$
Ext. Gentian.	q.s. ut ft. pil.

A pill to be given night and morning.

II.

Pulv. Antim. Co.	gr. xxxij.
Pulv. Ipecac. Co.	gr. xxxvj.
Ext. Gentian.	gr. XL.
Pulv. Glycyrrh.	q.s. ad ʒiv.

Ft. pil. xij.

One to be given every other day.

Distemper Powder.

Potass. Nitrat.	ʒiv.
Antim. Nig.	ʒij.
Sulphur.	ʒj.
P. Fœniculi	ʒj.

Misce.

Ten to thirty grains for a dose, according to the size of the dog.

Diuretic Powder for Horses.

Pulv. Resinæ	℥iij.
Potass. Nitrat.	℥iij.
Pulv. Fol. Buchu	℥iss.

M. et div. in pulv. xij.

Dog-Wash.

Saponis Mollis	℥ij.
Sacch. Ust.	q.s.
Nitrobenzol	♏x.
Aq. ad	Oj.

M.

Draught for Piles in Cows.

Ext. Taraxaci Liq.	℥iv.
Ammon. Chlorid.	℥j.
Pulv. Gentian.	℥j.

M.

After a purge of Glauber's salt, give the above twice daily in a pint of warm water.—(*Cresswell.*)

Dressing for Dog's Coat.

Potass. Carb.	℥ss.
Ol. Amygdalæ	℥ss.
Ol. Geranii	♏ij.
Aq. Dest. ad	℥viij.

Dissolve the potash salt in 2 oz. of water; add the oils, shake, and add the remainder of the water. Moisten the coat with the solution by means of a hair brush. The mixture to be shaken before use.

Driffield Oils.

A preparation for the same purposes as this is made by mixing together in a 4-lb. jar 15 oz. of linseed oil and 5 oz. of spirit of turpentine. Add, with constant stirring, 10 drachms of strong sulphuric acid, and after a few hours a pint of water. Allow to stand all night, decant the oil, and add an ounce of spirit of tar to it. Take care that the oil does not froth over the jar when adding the vitriol.

Embrocation Powder.

(For horses' broken knees.)

Plumbi Acet.	℥j.
Zinci Sulph.	℥j.
Cretæ Rub.	ʒj.

Misce bene.

This quantity (two tablespoonfuls) to make a quart of lotion.

Equinocure.

(A good tonic.)

Sodii Bicarb.	℥xij.
Ferri Peroxid.	℥vj.
Pulv. Fœnugræc.	℥vj.
Pulv. Anisi	℥vj.
Pulv. Gentian.	℥vj.
Pulv. Carui	℥vj.
Pulv. Potass. Nit.	℥xij.
Sulph. Subl.	℥xxiv.
Pulv. Antim. Tart.	℥iij.

Misce bene.

Dose.—A tablespoonful night and morning with the feed.

Ewes' Antiseptic Syringing Lotion.

Acid. Carbolic.	℥j.
Glycerini	℥iij
Aq.	℥xx.

M.

Directions.—The whole quantity to be mixed with a quart-jugful of warm water and used to syringe out the womb when the afterbirth is retained.

EWES' SOOTHING MIXTURE.

Ext. Ergotæ Liquid.	℥ss.
Tr. Opii	℥ss.
Spt. Ætheris	℥ss.
Tr. Lavand. Co.	℥ss.

M.

This makes two doses. When the afterbirth is retained repeat the dose after two hours.

EWES' STIMULATING MIXTURE.

(A substitute for spirits.)

Ammon. Carb.	ʒj.
Tr. Zingib.	℥ss.
Spt. Chloroform.	℥ss.
Inf. Gent. Co. Conc. ad	℥vj.

M.

Dose.—For a ewe, half a wineglassful in twice as much water; and for a lamb a dessertspoonful.

EYE-WATER FOR HORSES.

A saturated solution of boric acid coloured with liquor cocci.

FELLOW-CHINE OR COW LUMBAGO DRAUGHT.

Ammon. Carb.	ʒij.
Potass. Bicarb.	℥j.
Pulv. Gentian.	℥j.
Pulv. Zingib.	℥j.

M.

To be given in a pint of gruel twice a day.

Liniment.

Lin. Belladonn.	℥iv.
Lin. Ammon. Co.	℥iv.

M. (*Cresswell.*)

FEVER BALLS FOR HORSES.

Pulv. Pot. Nit.	℥viij.
Pulv. Camph.	℥ij.
Pulv. Antimonial.	℥iiss.
Pulv. Resin.	℥ij.
Theriacæ	q.s.

Make a mass, binding it with powdered gum, and divide into 5 drachm balls.

FEVER DRAUGHT FOR HORSES.

Spt. Æther. Nit.	℥j.
Liq. Ammon. Acet.	℥v.

M.

To be given before a hot mash supper.

FEVER POWDERS FOR HORSES

Pulv. Resinæ	℥iv
Pulv. Antim. Nig.	℥j.
Pulv. Glycyrrh.	℥iv

Misce.

One tablespoonful for a dose

FISTULA APPLICATION.

Zinci Chlorid.	℥j.
Aquæ Destill.	℥j.

Solve.

Two days after application syringe the fistula with—

Creolin.	℥j.
Aq. Destill	Oiij.

M. ft. lotio.

FLEMING'S TINCTURE OF ACONITE.

The B.P. tincture is generally prescribed in this book, but as Fleming's tincture is often ordered in veterinary practice, we append the formula: Bruised aconite root ℔j.; macerate with ℥xvj. of rectified spirit for four days; strain and treat the aconite by percolation with more spirit until the tincture obtained amounts to ℥xxiv.

FLY AND MAGGOT OILS.

I.

Spirit of Turpentine	℥v.
Spirit of Tar	℥v.
Corrosive Sublimate	℥ss.
Muriatic Acid	℥ss.
Butter Milk or Water	Cong. ss.

Mix.

II.

The following is a modification of a formula suggested by Professor Robertson:—

Corrosive Sublimate	℥j.
Methylated Spirit	℥viij.
Spirit of Tar	℥x.
Powdered Quillaia	℥ij.
Water to	Cong. j.

Powder the corrosive sublimate, and shake with the methylated spirit until dissolved; then add the quillaia and a pint of water. Macerate overnight, and add the spirit of tar and the rest of the water; occasionally shake well for a day or two, and strain.

Directions.—To prevent the fly striking, and for maggots: Mix two tablespoonfuls with a winebottleful of cold water.

To kill Lice.—Mix three tablespoonfuls with a winebottle of cold water and rub on with a brush.

For Mange.—Mix four tablespoonfuls with a winebottle of cold water, and well rub in the mixture with a brush every day until cured.

FLY POWDER.

Plumbi Ox. Rub.	℔ss.
Plumbi Alb.	℔iss.
Pulv. Umber Ang.	℔ij.
Flor. Sulph.	℔ij.
Pulv. Helleb. Alb.	℔ij.
Ol. Animalis	℥ij.
Ol. Picis	℥ij.

M. Ft. pulv.

To send out in 1-lb. packets labelled as stated on p. 247.

FLY OINTMENT (Australian).

To protect the eyes of buggy-horses from flies, use a fairly strong salve made of lard and oil of thyme.

FLY-BLOWN WOUNDS.

Use a solution of soluble mercuric potassic iodide, 1 in 1,000 to 200. The soluble tablets are useful for this purpose.

FOOT-ROT CREAM.

Cupri Sulph.	℥iv.
Hydrarg. Perchlor.	ʒj.
Acid. Carbol.	℥ss.
Pulv. Trag. Co.	ʒij.
Mel. Depurat.	q.s.

Ft. cremor.

FOOT-ROT OINTMENT (Australian).

Copper Sulphate	℥iv.
Verdigris	℥ij.
Zinc Sulphate	℥ij.
Bichloride of Mercury	℥j.
Blue Ointment	℥iv.
Lard	℥iv.
Butter of Antimony	℥ij.

Mix.

FOOT-ROT PASTE.

Cupri Sulphat.	℥iv.
Zinci Sulphat.	℥j.
Pulv. Tragacanth. Co.	ʒj.
Acid. Carbolic.	ʒiij.
Mel. Depurat.	℥ij.
Aq.	q.s.

M. Ft. pasta.

FOOT-ROT POWDER.

Camphor.	℥j.
Cupri Acetat.	℔j.

Reduce to fine powder and mix intimately.

Directions.—To be applied to the affected parts, and smeared with veterinary vaseline.

FOWL PILLS.

Reviver.

Pulv. Capsici	ʒj.
Pulv. Gentianæ	ʒiij.
Ext. Glycyrrh.	q.s. ut ft. massa

Tonic.

Ferri Sulphat.	ʒij.
Ext. Gentianæ	ʒss.
Calc. Phosphat.	ʒj.
Glycerin. Tragac.	q.s. ut ft. massa

Divide into 5-gr. pills in each case.

FOWL POWDER.

Pulv. Fœnugræc.	℥j.
Pulv. Piper. Nig.	℥j.
Pulv. Gentianæ	℥j.
Pulv. Glycyrrh.	℥ij.
Formalini	℥iv.

Misce.

A tablespoonful with the food for twenty hens.

GAPES IN PHEASANTS.

Sulphate of Iron	ʒj.
Capsicum	℥ss.
Fenugreek	℥j.
Red Sanderswood	℥j.
Liquorice	℥ij.
Treacle	a sufficiency

Mix the powders, and make into a soft pill-mass with the treacle.

GARGET OINTMENT.

(For inflammation of the udders of cows and ewes.)

Ung. Camphoræ	℥j.
Ung. Hydrarg.	℥j.
Ung. Petrolei Vet.	℥vj.

M.

Directions.—Gently rub or work the ointment over the udders for five minutes, after which the udders should be wiped carefully with a soft and clean rag.

GARGET WHITE OILS.

Liq. Calc. Saccharat.	ʒiij.
Aq. ad	℥x.

Misce et adde

Ol. Lini	℥x.

Agita bene.

To be applied freely to the udders.

Gelatin-coating Horse Balls.

Hold the horse-ball by means of a pin stuck in the end and dip into the following solution :—

Gelatin.	℥iv.
Acid. Boric.	ʒij.
Mucilag. Acac.	℥j.
Aq. Destillat.	℥XL.

Soak the gelatin in the water until soft, heat on a water-bath until dissolved, then add mucilage and boric acid.

Grease and Cracked Heels Ointment.

Sulphur. Subl.	℥j.
Plumbi Acetat.	℥ss.
Creolin.	℥ss.
Ol. Eucalypti	℥ss.
Vaselini	℥iv.
Lanolini	℥iv.

M. Ft. ung.

Apply twice daily.—(*Hoare.*)

Green Ointment.

Resin Ointment	℥v.
Verdigris	ʒij.
Spirit of Turpentine	℥ij.
Mutton Suet	℔ij.
Oil of Origanum	ʒiij.
Tincture of Iodine	ʒiij.

Mix.

This is a good remedy for scratches, hoof-evil, cuts, etc., and is also good for fistula, after the rowels are taken out, and a good healing ointment for any purpose.

Gripe Drench.

Chloroform	℥iv.
Pimento	℥ss.
Camphor	℥ss.
Opium	℥ss.
S.V.R.	Oj.
Capsicum	℥j.

Macerate the opium and capsicum in the spirit for seven days, filter, and mix with the other ingredients.

Dose.—1½ oz., with 1 oz. of spirit of nitre, in a pint of warm gruel.

Healing Lotion.

(For sprains, bruises, sore throats, cuts and wounds in horses.)

Liq. Plumbi Subacet.	℥j.
Ol. Eucalypti	℥iv.
Aceti	℥vij.
Vitell. Ovorum	ij.
Ol. Sesami ad	℥xx

Rub the egg-yolks in a mortar with the sesame oil, add the eucalyptus oil, then the lead and vinegar mixed together, and make an emulsion.

Heaves Remedy.

Canada Balsam	℥iv.
Copaiba	℥iv.
Calcined Magnesia	a sufficiency

Make a mass, and divide into half-ounce balls.

Dose.—One ball night and morning for eight days.

Horse Balls.

Barbadoes Aloes	℥viij.
Ginger	℥j.
Soap	℥j.
Treacle	a sufficiency

Melt at a moderate heat to form a mass. Dose from ʒv. to ʒx.

J. Bell & Co.'s formula (*Pharm. Journn.* vol. v.).

HORSE TICE, OR ENTICE,

is generally composed of an equal mixture of ol. anisi and ol. rhodii. To catch colts, this mixture is rubbed into the hands or upon the coat-sleeve.

Restive horses are sometimes rendered quiet by smearing the bit with it. It does not answer equally well with all individuals, as some persons have an influence over horses which they cannot themselves ascribe to drugs.

HOVEN DRAUGHT FOR CATTLE.

Creolin.	℥j.
Ol. Terebinth.	℥iv.
Spt. Ammon. Arom. . .	℥iv.
Ol. Lini	Oiss.

M.

For one dose.—(*Hoare.*)

HUSK MIXTURE.

Ferri Peroxid.	ʒij.
Spirit. Picis	℥j.
Ol. Terebinth.	℥j.
Ol. Lini ad	℥viij.

M.

A small tablespoonful night and morning.

INFLUENZA (PINK EYE) POWDERS.

Pulv. Ammon. Chlorid. .	℥iij.
Pulv. Potass. Nit. . . .	℥iij.
Pulv. Glycyrrhiz. . . .	℥viss.
Pulv. Sodii Sulphat. . .	℥xx.

M.

Dose.—A teaspoonful in gruel thrice daily.

INFLUENZA BALLS.

Pulv. Camphor. . . .	ʒj.
Pulv. Pot. Nit.	ʒv.
Pulv. Aloes	℥j.
Lini Farinæ	ʒvj.
Theriacæ	q.s.

Ft. mass. et div. in bolos ij.

'Give one ball immediately, and the other three hours after.'

INFLUENZA DRAUGHT FOR HORSES.

Chlorodyni	ʒj.
Spt. Æther. Nit. . . .	℥ij.
Liq. Ammon. Acet. . .	℥ij.
Aq. ad	℥xv.

M.

This dose is to be given every three hours during the first stage, when much shivering is evident.—(*Hoare.*)

LAMB DRENCH.

Magnesium Sulphate . .	℥iv.
Sodium Sulphate . . .	℥iv.
Diapente	℥ij.
Nitre	℥j.
Sulphur	℥j.
Peroxide of Iron . . .	℥ss.

Mix intimately.

Dose.—1 oz. in gruel.

For *Diapente*, see p. 393.

LAMBING OILS.

Acid. Carbolic.	℥ss.
Ol. Viridis	℥ij.
Ol. Gossypii	℥xxij.

Directions.—To dress the shape, and to apply inside the passage by means of the fingers in order to assist the delivery of the lamb. If the afterbirth is retained, some of the oil should be introduced into the womb by means of a syringe.

Lameness Liniments.

I.

Liq. Ammon.	℥v.
Spt. Camphor.	℥v.
Tr. Canth. (1 in 10)	℥iss.
Sapon. Mollis	℥iij.
Aq. ad	℥xxx.

Dissolve the soap in the water, and add the other liquids.

II. *Restitution Fluid.*

Sodii Chlorid.	℥v.
Tr. Capsici	℥v.
Spt. Camphor.	℥x.
Liq. Ammon.	℥x.
Spt. Ætheris	℥x.
Spt. Tenuior.	℥x.

Rub the salt to fine powder and mix with the liquids.

Leeming's Essence.

Cantharides	℥viij.
Camphor	℥ij.
Euphorbium	℥viij.
Oil of Origanum	℥j.
Castile Soap	℥iij
Spirit	Ovj.

Digest for fourteen days and filter.

Lice in Horses.

I.

Water	Oij.
Creolin	℥iiss.
Vinegar	℥iij.

To be applied to the nits. The whole of the body to be repeatedly washed and then a mixture of equal parts of petroleum and sweet oil applied.

II.

Ung. Hydrarg.	℥ij.
Ol. Lini	℥iij.

To be applied to the whole surface of the body with a brush.

Lotion for Broken Knees.

Cupri Sulph.	℥j.
Gum. Benzoin.	℥ij.
Aquæ	℥XL.

Boil in covered vessel and filter.

Lotion for Fouls in Cattle.

Liq. Hydrarg. Pernit.	℥j.
Glycerin.	℥ss.
Aq. ad	℥iij.

M.

To be applied to the sores with a soft rag once a day.

Malt Mash

is made in the same way as Bran Mash, substituting malt for bran.

Mange Smear.

Sulphuris Nigri	ʒij.
Olei Cadini	ʒij.
Spiritus Picis ad	℥j.

MILK FEVER AND INFLAMMATION IN CATTLE.

Liq. Ammoniæ	℥ss.
Tinct. Lavand. Co.	♏x.
Aq. ad	℥j.

For one dose. To be mixed with a pint or so of cold water and given every four hours.

MILK-FEVER POWDER FOR COWS.

Pulv. Camphor.	ʒj.
Pulv. Potass. Nit.	ʒij.
Pulv. Sodii Sulphat. Exsic.	℥iss.

M.

This powder to be given thrice daily in water.

MITHRIDATE.

In Yorkshire this preparation frequently forms an ingredient of cattle-drinks. The formula used locally is—

P. Bacc. Lauri	℥j.
P. Pip. Long.	℥j.
P. Sem. Carui	℥ss.
P. Sem. Anisi	℥ss.
P. Rad. Gentian.	℥ij.
P. Rad. Curcum.	℥ij.
P. Rad. Valerian.	℥j.
P. Rad. Zingib.	℥j.
P. Gum. Acaciæ	℥ij.
Boli	q.s. ad color

MIXTURE FOR A COLD.

Liq. Amm. Acet. Conc.	℥iv.
Sp. Æth. Nit.	℥iv.
Tinct. Camph. Co.	℥iv.
Aq. ad	℥XL.

M. ft. mist. Quartam partem nocte maneque.

MURRAIN POWDER FOR CATTLE.

Pulv. Aloes Soc.	℥ij.
Pulv. Zingib.	℥j.
Pulv. Sod. Sulph.	℔j.

For one dose. To be administered in 3 pints of thin gruel or small beer.

OATMEAL GRUEL.

Put 1 lb. of medium oatmeal into a basin and add about 1 gallon of cold water. Mix thoroughly, let the coarser particles settle, pour off the rest in a few seconds and bring it to the boil, stirring all the time.

OINTMENT FOR GREASE IN HORSES.

Citrine ointment	℥ij.
Lard	℥ij.
Spirit of Turpentine	℥ss.
Sat. Sol. Nitrate of Copper	ʒij.

Mix.

OINTMENT FOR HORSES' KNEES.

Mercurial Ointment	℥ij.
Honey	℥j.
Camphor	ʒij.
Burned Cork, powdered	ʒij.

Mix.

OINTMENT FOR SORES, CHAFES, ETC.

Pulv. Boracis	ʒj.
Pulv. Carbo. Animalis	ʒss.
Ol. Picis	♏x.
Ol. Camphor.	ʒj.
Adipem ad	℥j.

M. ft. ung. Nocte maneque utend.

OINTMENT FOR WARTS OR ANGLEBERRIES.

I.

Arsenici Sulphid. Flav.	ʒj.
Glycerini	ʒij.
Lanolini	ʒv.

M.

Apply to the part night and morning.

II.

Acid. Arsenios.	℥j.
Sapo. Mollis	℥j.

Misce.

PARTURITION-PILLS FOR CATS OR SMALL DOGS.

I.

Ergotini	gr. ij.
Ext. Cannabis Indicæ	gr. j.

Ft. pil.

One every two or three hours if required.

II.

Ergotini	gr. ij.
Eserinæ	gr. $\frac{1}{10}$

Give as above.

PHYSIC DRENCH FOR HORSES (Australian).

I.

Aloes	ʒij.–ʒiv.
Ginger	ʒij.
Linseed Oil	Oj.

Mix.

II.

Aloes	ʒiv.
Powdered Soap	ʒj.
Salt of Tartar	ʒi.
Wate to	Oj.

PIG POWDERS.

I.

Flowers of Sulphur	℔xx.
Red Ochre	℔iss.
Tartarated Antimony	℥xij.

Divide into ½-oz. powders. One powder to be given every few weeks.

II.

Pulv. Pot. Nit.	℥viij.
Sulph. Sublim.	℥viij.
Ferri Oxid. Rub.	℥iv.
P. Curcumæ	℥viij.
P. Carui	℥ij.
P. Fœnugræc.	℥x. M.

Doses.—From a dessertspoonful to a tablespoonful.

III.

Golden sulphuret of antimony and red oxide of iron, of each 15 grains; common salt, 30 grains; nitre, 40 grains; powdered liquorice, 30 grains. Mix well, and give with the food.

IV.

Pulv. Antim. Nig.	℥iv.
Pulv. Sulphur. Nig.	℥vj.
Ferri Oxidi	℥ij.
Pulv. Glycyrrh.	℥viij.
Pulv. Fœnugræc.	℥viij.

Divide into ½-oz. powders, and give one daily.

V.

FOR WORMS.

Antim. Tart.	gr. x.
Santonin.	gr. x.
Pulv. Croton. Sem.	gr. vj.
Ferri Sulphat.	gr. xx.
Pulv. Nucis Arecæ	℥j.
Pulv. Glycyrrhizæ	℥iv. M.

To be given in the morning, after a supperless night, and repeated daily.

PIGEON PILLS.

Ferri Sulph. Gran.	gr. xxx.
Pulv. Capsici	gr. x.
Ext. Glycyrrh.	gr. xxx.
Pulv. Glycyrrh.	ʒj.

M. et div. in pil. xxx.

Coat. The dose for a pigeon is one pill two or three times daily.

PURGATIVE OIL FOR CATTLE.

Ol. Crotonis	ʒss.
Tr. Opii	ʒiiss.
Ext. Glycyrrh. Liq.	ʒiij.
Ol. Lini ad	℥xx.

Dose.—For a calf a wineglassful, for a cow two wineglassfuls or more.

PURGATIVE POWDER FOR COWS.

Tartar Emetic	ʒj.
Dried Glauber's Salt	℥viij.
Powdered Aloes	℥j.

Give a tablespoonful every three hours until the bowels are moved.

PURGATIVE POWDERS FOR HORSES.

I.

Powdered Croton Seeds	℈j.
Crushed Linseed	ʒj.
Powdered Caraway	℈j.

A dose for a carriage horse.

II.

Pulv. Sem. Croton.	gr. iv
Pulv. Aloes	ʒj.

Misce pro dosi.

III.

FOR CATTLE AND HORSES.

Epsom Salt	℔j.
Powdered Fenugreek	℥j.
Peroxide of Iron	℥ss.

RED CONDITION BALLS.

Ferri Carb.	ʒiss.
P. Pot. Nit.	ʒj.
P. Quassiæ	ʒj.
Antim. Sulphuret.	ʒss.
Pulv. Zingib.	ʒss.
Ol. Fœniculi	gtt. x.

M.

Mass with linseed meal and simple syrup to form 6-drachm balls.

Dose.—One twice or three times a week.

RED-WATER POWDER FOR CATTLE.

Pulv. Potass. Nitrat.	℥ij.
Pulv. Gentianæ	℥j.
Pulv. Fœnugræc.	℥j.
Pulv. Glycyrrh.	℥ij.

Mix and weigh into 2-dr. powders. One powder to be given twice a day.

RHEUMATISM POWDER FOR PIGS.

Potassii Bicarbonat.	ʒij.
Sulphuris Nig.	ʒij.
Sodii Bicarbonat.	ʒij.
Sodii Salicylat.	ʒss.
Antimonii Nig.	ʒiss.

Ft. pulv.

One powder to be given with food every alternate day.

RINGWORM LOTION FOR CATTLE.

Sodii Hyposulphit.	℥iv.
Aquæ	Oj.

Solve.

To be applied to the affected parts.

II.

Sulphuris Nig.	℥j.
Acid. Carbolic.	℥ss.
Adipis	℥v.

III.

Iodi	ʒj.
Adipis	℥v.

IV.

Cupri Sulphatis	℥j.
Adipis	℥v.

V.

Acid. Sulphuric.	ʒj.
Glycerini	ʒiij.

Misce cautè.

Nos. II. to V. must be applied daily.

ROUP PILLS FOR POULTRY.

I.

Hydrarg. Subchlor.	gr. j.
Pulv. Antimonialis	gr. j.
Pulv. Glycyrrhiz.	gr. j.
Copaibæ	q.s.

Ft. pil.

A pill to be given night and morning.

II.

Pulv. Cubebæ	℥j.
Magn. Levis	℥ss.
Bals. Copaibæ	q.s.

Mass and divide into 3-gr. pills, a few drops of oil of aniseed being added to the mass to give a distinctive smell.

ROUP POWDER.

Pulv. Potass. Nitrat.	℥j.
Pulv. Cubebæ	℥j.
Pulv. Lini	℥x.
Pulv. Glycyrrh.	℥iv.

Mix. A tablespoonful with the food for ten fowls.

SADDLE-GALLS IN HORSES.

Acid. Tannic.	ʒiij.
S.V.M.	q.s. ut solve
Acid. Boric.	℥iij.
Glycerini	q.s. ut solve
Aq. ad	Oij.

Misce.

To be applied twice daily.

SHEEP MIXTURE.

(For cough, fever, etc.)

Acet. Ipecac.	℥ij.
Liq. Cocci	ʒvj.
Chlorodyni	ʒiij.
Spt. Terebinth.	℥iv.
Liq. Ammon. Acet. ad	℥viij.

M.

Directions.— A small tablespoonful three times a day.

STABLE LINIMENT

Ol. Origani,
Ol. Lavand. Spic.,
Ol. Terebinth.,
Ol. Lini . . aa. partes æquales

STIMULATING WHITE LINIMENT.

Ol. Terebinth.	℥xvj.
Camphoræ	ʒj.
Saponis Mollis	℥ij.
Aq. Destil.	℥ij. vel q.s.

Mix the soap with the water; dissolve the camphor in the turpentine; mix the two, and bring down to the desired consistency with water.—(*Hoare.*)

SWINE CRAMP POWDERS.

Potass. Bromid	ʒiss.
Sodii Chlorid.	ʒij.
Pulv. Glycyrrhiz.	℥j.

M. et div. in pulv. xij.

One powder to be given three times a day.

SWINE DIARRHŒA MIXTURE.

Tr. Opii	ʒij.
Tr. Valer. Am.	ʒiij.
Inf. Catechu	℥ij.
Liq. Calc. Sacch.	ʒiv.
Dec. Quercûs ad	℥vj.

M.

Dose.—℥j. twice or three times a day.

THROAT LINIMENT.

(For sore throats in horses.)

Ol. Terebinth.	℥j.
Liq. Ammon. Fort.	℥j.
Ol. Olivæ	℥j.

M. (*Hoare.*)

TINCTURA OPII AQUOSA.

(For veterinary preparations.)

Boil $1\frac{1}{2}$ oz. of opium with 5 oz. of water for half an hour, replacing any water lost by evaporation; then make up to 15 oz. with water, add 5 oz. of rectified spirit (or glycer. acid. boric.), and after two or three day filter.

TONIC PILLS FOR PIGEONS.

Ferri Sulph. Gran.	ʒj.
Pulv. Capsici	℈j.
Ext. Nucis Vom.	gr. vj.
Pulv. Gentianæ	ʒss.
Glyc. Tragacanth.	q.s.

Mix, and divide into sixty pills. Coat with sugar. Allow each pigeon six of these pills per day.

VETERINARY SOLUTION OF ALOES.

Aloes Barb.	℔j.
Glycerini	℥viij.
Potass. Carbonat.	℥ij.
Chloroformi	ʒij.
Aq. ad	Ovj.

Melt the aloes, glycerin, and potassium together in a water-bath and add part of the water. Transfer to jar; add the rest of the water and the chloroform. Shake occasionally for a few days, then decant and filter if necessary.

WARBLES IN HORSES AND CATTLE.

Zinci Sulphat.	ʒiij.
Liq. Ammon. Fort.	ʒvj.
Spiritûs Vini	℥iss.
Liq. Plumbi Subacet.	℥iss.
Tr. Aloes et Myrrhæ	ʒiss.
Aq. ad	℥viij.

M. Ft. lotio.

'To be used twice daily.'

WARBLE PREVENTIVE.

Ol. Lini	℥iiiss.
Ol. Terebinth.	℥iiiss.
Tinct. Asafetidæ	℥j.

Smear on the legs, and along the back and sides, early in summer, and repeat occasionally during the hot season.

WART LOTION FOR CATTLE.

Zinci Chlorid.	ʒj.
Spirit. Vini	℥j.

Solve.

Soak the wart first with hot water, and apply the lotion daily.

WORM OIL.

(For worms in lambs' throats.)

Spirit of Turpentine . .	℥iv.
Linseed Oil	℥iv.
Powd. Red Sanderswood	℥ss.

Mix.

A teaspoonful of this to be slowly poured over the animal's throat.

WORM POWDER FOR DOGS.

Sodii Acetat.	ʒvj.
Sodii Hydrat.	ʒij.
Sodii Chlorid.	℥j. ʒij.
Ammon. Carbonat. . .	℥j. ʒij.

Misce. A teaspoonful is given with the food once daily for several doses. The alkali is said to dissolve the worms.

WORM REMEDIES FOR HORSES.

I.

Dippel's Oil (Ol. Animal.)	ʒiiss.
Paraffin Oil	ʒiiss.
Powdered Valerian . .	℥j.
Powdered Santonica . .	℥ij.

Mix.

To be given in a corn feed.

II.

Pulv. Acid. Arsenios. .	gr. xv.
Sem. Lini Contus. . .	℥ss.

M.

A powder to be given at supper-time for four or five days.

III.

Thymol	gr. xv.
Spirit	℥j.
Skim Milk to	℥x.

IV.

Cupri Sulph.	℥j.
Arsenic. Alb.	ʒss.
Pulv. Sem. Santonic. . .	℥j.
Pulv. Glycyrrh. . . .	℥iv.

M.

A tablespoonful in a mash twice a week.

V.

Santonin	ʒj.
Tartar Emetic	ʒss.
Physic Mass.	℥ss.

Mix and make a ball.

VI.

Pulv. Antim. Tart. . .	ʒiv.
Pulv. Jalapæ	℥iss.
Pulv. Zingiberis . . .	ʒij.
Pulv. Aloes Barbad. . .	℥ij.
Pulv. Sapon. Hispan. .	℥ss.
Ol. Caryophylli . . .	ʒss.
Syrupi Simplicis . . .	℥j.
Mucil. Tragacanth. . .	℥ss.

Make a mass, and divide into 1-oz. balls.

Directions.—Give a ball after a very light meal at night, repeating in two or three days if necessary. A tonic ball should be given once a week, or else a tablespoonful of tonic and condition powder every other day, to horses which are subject to worms.

VII.

Sulphur. Nigri	℥j.
Pulv. Antim. Tart. . .	ʒj.
Bol. Armen.	ʒj.

Mix thoroughly in a mortar.

Directions.—To be given after a light mash.

VIII.

Pulv. Nuc. Arecæ	ʒij.
Pulv. Gentianæ	℥ij.
Ferr. Redact.	℥j.

Div. in pulv. xij.

A powder is to be followed by an emulsion of

Ol. Terebinth.	℥ij.
Ol. Lini	℥ij.
Solut. Saponis	q.s. ut ft. emulsio

WOUND BALSAM.

Elemi	℥ij.
Venice Turpentine	℥iv.
Tallow	℥iv.
Lard	℥iv.
Cotton Seed Oil	℥j.
Carbolic Acid	gr. x.
Alkanet	a sufficiency

WOUND-DUSTING POWDER.

Iodoform	ʒj.
Pulv. Acid. Boric.	℥vj.

M.

To be dusted upon the wounds and sores of horses.

WOUND STONE.

Iron Sulphate	℔ij.
Alum	℔ij.
Zinc Sulphate	℥iv.
Copper Sulphate	℥iv.
Armenian Bole	to colour

Powder the ingredients. Mix and sift.

Put up in 2-oz. packets. To be dusted on the wounds alternate days until the sore appears healthy.

STOPPING FOR HORSES' HEELS.

Stockholm Tar	℥viij.
Tallow	℥viij.
Lard	℥viij.
Beeswax	℥ij.

Melt the last three first, then add the tar, and stir up well.

NEWMARKET PHYSIC-PASTE.

This paste was supplied in the 'fifties to the leading trainers and turfites—viz., the late John Scott, 'the Wizard of the North' in racing circles, the late Colonel Peel, Count Batthyani, the late Marquis of Exeter's trainer, the late John Day (Lord Palmerston's trainer), Jem Robinson (the celebrated jockey), Frank Battlis, 'Nat' (Colonel Peel's jockey), Sam Rogers, Job Marron (the rider of Teddington), and many others. The recipe is a good one.

Aloes Barbadensis	℔xiiiss.
Saponis Communis	℔ivss.
Potassii Carbonatis	℥xviij.
Ol. Anisi	℥vj.
Aquæ	℥xx.

Cut the soap into small shreds and put into a pan with the water. Heat, and when thoroughly melted and quite smooth add the carbonate of potash and the aloes. Let it simmer for some time, stirring frequently until the aloes is dissolved. If allowed to boil, the mass will come over before melted. Lastly add the oil of anise, and stir it well in.

A small piece of the mass taken out before the anise is added, and cooled on a slab, will tell whether the paste has been brought to a proper consistence or not. Twelve drachms of the mass contains 8 drachms of aloes. The paste used to be supplied to trainers in 3-lb., 4-lb., and 7-lb. tins.

THE VETERINARY SURGEONS ACT,
44 & 45 VICT. c. 62

PASSED AUGUST 27, 1881

WHEREAS it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon for the cure or prevention of diseases in or injuries to horses and other animals, to distinguish between qualified and unqualified practitioners :

Be it therefore enacted by the Queen's most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled and by the authority of the same as follows :

1. This Act may be cited as the Veterinary Surgeons Act 1881.

2. In this Act—

'The Royal College of Veterinary Surgeons' means the Royal College of Veterinary Surgeons incorporated and regulated by a charter and two supplemental charters granted by Her Majesty in the years one thousand eight hundred and forty-four, one thousand eight hundred and seventy-six, and one thousand eight hundred and seventy-nine respectively.

'The Registrar' means the Registrar for the time being of the said Royal College.

'Veterinary surgery' means the art and science of veterinary surgery and medicine.

3.—(1.) The register of members of the Royal College of Veterinary Surgeons directed by Her Majesty's said Royal Charter of 1876 to be made and maintained, shall be styled the Register of Veterinary Surgeons, and shall be kept as accurately as possible by the Registrar.

(2.) The Council of that College shall cause correct copies of the said register to be from time to time and at least once a year printed under their direction and published and sold, and such copies shall be admissible in evidence.

4. The Royal College of Veterinary Surgeons shall be bound to make provision in the manner permitted by their charters for the examination in England of the students attending the Royal Veterinary College, and in

Scotland of the students attending the several Scotch Veterinary Colleges, and in Ireland whenever a Veterinary College shall be established in that country, and to admit and register such students as have passed the examination as members of the said Royal College under the provisions of such charters and this Act.

5.—(1.) The Registrar shall from time to time insert in the Register of Veterinary Surgeons any alteration which may come to his knowledge in the name or address of any person registered.

(2.) The Registrar shall remove from the said register the name of every deceased person.

(3.) The Registrar may remove from the said register the name of a person who has ceased to practise, but not (save as hereinafter provided) without the consent of that person.

(4.) Where the Registrar has reason to think that any person registered has ceased to practise, the Registrar may send by post to such person a notice inquiring whether or not he has ceased to practise or has changed his residence; and if the Registrar does not within three months after sending the notice receive any answer thereto from such person, the Registrar may within fourteen days after the expiration of the three months send him by post in a registered letter another notice referring to the first notice and stating that no answer thereto has been received, and if the Registrar does not within one month after sending the second notice receive any answer thereto, such person shall for the purpose of the present section be deemed to have ceased to practise and his name may be removed accordingly.

(5.) In the execution of his duties the Registrar shall act on such evidence as in each case appears sufficient.

6. The power conferred by the said Supplemental Charter of 1876 on the Council of the said Royal College, at a meeting of the Council, at which not less than two thirds of the members are present, and with the consent of three fourths of the members so present, but not otherwise, to remove a name from the Register of Veterinary Surgeons, may be exercised in respect of any person who is at the passing of this Act on that register, or who is after the passing of this Act placed thereon under the said charter, or this Act, but in the following cases only (that is to say), at the request or with the consent of the person whose name is to be removed, or where a name has been incorrectly entered, or has been fraudulently entered or procured to be entered, or where a person registered has, either before or after the passing of this Act, and either before or after his registration, been convicted, either in Her Majesty's dominions or elsewhere, of an offence which, if committed in England, would be a misdemeanour or higher offence, or where a person registered is shown to have been guilty, either before or after the passing of this Act, and either before or after his

registration, and either in Her Majesty's dominions or elsewhere, of any conduct disgraceful to him in a professional respect.

7.—(1.) Where the Council of the said Royal College have removed the name of any person from the Register of Veterinary Surgeons, the name of that person shall not be again entered in the register except by a resolution of the Council passed under this section, or by order of a court of competent jurisdiction.

(2.) The Council may by resolution passed by a like proportion of their number as is for the time being required for the removal of a name from the said register, direct the Registrar to restore to the register any name removed therefrom, either without fee or on payment of such fee not exceeding the registration fee as the Council from time to time fix, and the Registrar shall restore the same accordingly.

(3.) The name of any person removed from the said register at the request of such person or with his consent shall, unless it might if not so removed have been removed by order of the Council, be restored to the register, on his application and on payment of such fee not exceeding the registration fee as the Council from time to time fix.

8.—(1.) The Council of the said Royal College shall, for the purpose of exercising in any case the power of removing a name from or of restoring a name to the Register of Veterinary Surgeons, ascertain the facts of the case by a committee of the Council, the powers of the committee being exerciseable by not fewer than three members of the committee; and the report of the committee, after hearing the person concerned, if he so desires, shall be for the purpose aforesaid conclusive as to the facts, but so that the Council shall form their own judgment on the case independently of any opinion of the committee.

(2.) If in any case the Council determine to remove the name of any person from the Register of Veterinary Surgeons, or not to restore thereto the name of any person, the Council shall, if required by him, state in writing the reason for that determination, and he may appeal to the Privy Council; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal, or order that Council not to remove the name of the appellant, or to restore his name, as the case may require.

9. A copy of the Register of Veterinary Surgeons for the time being purporting to be printed and published in pursuance of this Act shall be evidence in all cases (until the contrary be made to appear) that the persons therein named are on the Register of Veterinary Surgeons; and the absence of the name of any person from such copy shall be evidence (until the contrary be made to appear) that such person is not on that register: Provided that in the case of any person whose name does not appear in such copy a certified copy under the hand of the Registrar of the entry of the name of

such person in the said register shall be evidence that such person is on the said register.

10. Every registrar of deaths in the United Kingdom, on receiving notice of the death of any person on the Register of Veterinary Surgeons, shall forthwith transmit by post to the Registrar a certificate under his hand of such death, with the particulars of time and place of death ; and on the receipt of such certificate the Registrar shall erase the name of such person from the Register of Veterinary Surgeons, and shall transmit to the said registrar of deaths the cost of such certificate and transmission.

11. Any person who wilfully procures or attempts to procure himself to be placed on the Register of Veterinary Surgeons by making or producing or causing to be made or produced any false or fraudulent declaration, certificate, or representation, either in writing or otherwise, and any person aiding and assisting him therein, shall be deemed guilty in England or in Ireland of a misdemeanour and in Scotland of a crime or offence punishable by fine or imprisonment, and shall on conviction thereof be liable to a fine not exceeding fifty pounds or to be imprisoned with or without hard labour for any term not exceeding twelve months.

12. If the Registrar wilfully makes or causes to be made any falsification in any matter relating to the Register of Veterinary Surgeons, he shall be deemed guilty of a misdemeanour, and shall be liable to a fine not exceeding fifty pounds, or to be imprisoned with or without hard labour for any term not exceeding twelve months.

13.—(1.) Where a person shows that he holds some recognised veterinary diploma granted to him in a British possession, and either that the grant of such diploma occurred when he was not domiciled in the United Kingdom, or in the course of a period of not less than five years during which he resided out of the United Kingdom, or, if he was practising veterinary surgery in the United Kingdom at the passing of this Act, that he has practised veterinary surgery for not less than ten years, either in the United Kingdom or elsewhere, he shall upon payment of the registration fee be entitled without examination in the United Kingdom to be registered as a colonial practitioner in the Register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(2.) Where a person shows that he obtained some recognised veterinary diploma granted in a foreign country, and either that he is not a British subject, or that if a British subject he has practised veterinary surgery for more than ten years elsewhere than in the United Kingdom, or if he was practising veterinary surgery in the United Kingdom at the passing of this Act for not less than ten years, either in the United Kingdom or elsewhere, and either continues to hold that diploma or has not been deprived thereof by any cause which disqualifies him for being registered under this Act, he shall, on payment of the registration fee, be entitled without examination in the United Kingdom to be registered as a foreign practitioner in the Register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(3.) For the purpose of this section a veterinary diploma is any diploma, licence, certificate, or other document granted by any university, college, corporation, or other body in respect of veterinary surgery, and includes a licence or authority to a person to practise veterinary surgery granted by any department of or persons acting under the authority of the government of the country or place within or without Her Majesty's Dominions wherein the licence or authority is granted ; and a British Possession is any part of Her Majesty's Dominions out of the United Kingdom ; and a recognised veterinary diploma is a veterinary diploma recognised for the time being by the Council of the said Royal College as furnishing a sufficient guaranty of the possession of the requisite knowledge and skill for the efficient practice of veterinary surgery, and as entitling the holder thereof to practise veterinary surgery in the British Possession or foreign country wherein the diploma was granted.

(4.) If a person is refused registration as a colonial practitioner, or as a foreign practitioner, the Council of the said Royal College shall, if required by that person, state in writing the reason for that refusal, and if that reason be that the veterinary diploma held or obtained by him is not a recognised veterinary diploma, that person may appeal to the Privy Council, and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to recognise that veterinary diploma.

14. The said charters of the Royal College of Veterinary Surgeons are hereby confirmed, and are declared to be and shall be in full force and virtue, except as far as the same are by this Act altered, or as the same are inconsistent with this Act, but not so as to prevent the making of any amendment thereof or addition thereto by any supplemental Royal Charter not being inconsistent with this Act.

15.—(1.) Where at the passing of this Act any person practises and has continuously for not less than five years next before the passing of this Act practised veterinary surgery in the United Kingdom, but is not on the Register of Veterinary Surgeons, he shall be entitled, subject to the provisions of this Act, to be placed on a separate register under the heading of 'Existing Practitioners,' without examination, on such terms as to payment of fees, and as to other matters, as the Council of the said Royal College, with the approval of the Privy Council, direct.

(2.) On any person applying for registration under this section within one year after the passing of this Act, and thereupon, or within a reasonable time thereafter, producing to the Council of the said Royal College evidence of his title to registration by statutory declarations of himself and of other persons able to testify on his behalf, or such other evidence as that Council reasonably require, he shall be registered under direction of that Council accordingly.

(3.) If a person is refused registration under this section, the Council of the said Royal College shall, if required by him, state in writing the reason for that refusal, and he may appeal to the Privy Council; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to register the appellant under this section.

(4.) No person registered under this section shall be deemed to be a member of the said Royal College within the said Charters or this Act.

16. If after the passing of this Act any person not being a fellow or a member of the Royal College of Veterinary Surgeons takes or uses any name, title, addition, or description, by means of initials or letters placed after his name, or otherwise, stating or implying that he is a fellow or a member of the Royal College of Veterinary Surgeons, he shall be liable to a fine not exceeding twenty pounds.

17.—(1.) If after the thirty-first day of December one thousand eight hundred and eighty-three any person, other than a person who for the time being is on the Register of Veterinary Surgeons, or who at the time of the passing of this Act held the veterinary certificate of the Highland and Agricultural Society of Scotland, takes or uses the title of veterinary surgeon, or veterinary practitioner, or any name, title, addition, or description stating that he is a veterinary surgeon or a practitioner of veterinary surgery or of any branch thereof, or is specially qualified to practise the same, he shall be liable to a fine not exceeding twenty pounds.

(2.) From and after the same day a person other than as in this section mentioned shall not be entitled to recover in any court any fee or charge for performing any veterinary operation, or for giving any veterinary attendance or advice, or for acting in any manner as a veterinary surgeon or veterinary practitioner, or for practising in any case veterinary surgery, or any branch thereof.

18.—(1.) All powers vested in the Privy Council by this Act may be exercised by an Order of Council made by two or more of the Lords and others of Her Majesty's Most Honourable Privy Council.

(2.) An order made by the Privy Council under this Act may be made conditionally or unconditionally, and may contain such terms and directions as to the Privy Council seem just.

(3.) The Council of the said Royal College shall forthwith obey any Order of the Privy Council under this Act, and observe and fulfil all conditions, terms, and directions therein contained.

19. Fines and imprisonment under this Act may be recovered and imposed summarily, that is to say—

in England in manner provided by the Summary Jurisdiction Act 1848 and the Summary Jurisdiction Act 1879 and any Act amending either of those Acts;

in Scotland before the sheriff or sheriff-substitute or two justices in manner provided by the Summary Procedure Act 1864 and any Act amending the same;

in Ireland within the police district of Dublin metropolis in manner directed by the Acts regulating the powers and duties of justices of the peace for such district or of the police of such district, and elsewhere in Ireland before two or more justices of the peace in manner directed by the Petty Sessions (Ireland) Act 1851 and any Act amending the same.

A prosecution under this Act may be instituted by the Council of the Royal College of Veterinary Surgeons, but shall not be instituted by a private person without the written consent of the said Council.

20. Nothing in this Act shall affect the charter and supplemental charters granted by Her Majesty to the Royal Veterinary College in the years 1875 and 1877 respectively, or any of the property, rights, powers, and privileges of that College thereunder.

THE TITLE 'VETERINARY CHEMIST'

In February 1893 the Royal College of Veterinary Surgeons prosecuted Mr. Richard Henry Groves, pharmaceutical chemist, of Blandford, for an alleged infringement of the Veterinary Surgeons Act, sect. 17, by having published a book or pamphlet recommending certain veterinary medicines on which he has described himself as a 'pharmaceutical and veterinary chemist.' Counsel for the prosecution stated to the magistrates that the action had been brought 'to have once for all the important question decided.' The College relied principally on a judgment given in a previous case (R.C.V.S. *v.* Robinson) by Justices Hawkins and Wills, who had held that in using the description 'veterinary forge' the defendant, who was a person not qualified under the Veterinary Surgeons Act, had professed to have some special skill in veterinary surgery, and they held, therefore, that he had infringed the Act. The Blandford magistrates considered that the case was doubtful, and they dismissed the summons, but stated a case. The proprietors of *The Chemist and*

Druggist had organised a subscription among chemists and druggists interested in the question, and the appeal came before a divisional Queen's Bench Court, and was heard by Justices Day and Lawrance on May 31, 1893. A full report of the proceedings before the magistrates appears in *The Chemist and Druggist*, February 11, 1893, and the arguments heard by the High Court and the judgment there delivered are reported in *The Chemist and Druggist*, June 3, 1893.

After hearing Mr. Poland for the College, the judges, without calling upon Mr. Bray, who appeared for the chemist, dismissed the appeal. Mr. Justice Day said: 'As far as I can see, it is competent for any person, whether he is a pharmaceutical chemist or no chemist at all, to publish his views about animal diseases, and to make suggestions as to what he thinks the best mode of treating them. I can see no possible objection to anything of the sort. . . . I am not at all satisfied that because a man happens to be a chemist he is debarred from publishing a book of the kind. . . . Then it is said Mr. Groves may not do what he has done because he describes himself as a veterinary chemist. From the term "veterinary chemist," I should think a man was meant who laid himself out for the preparation of medicines used for horses, cows, etc. I am not aware that that is a part of veterinary surgery, or that that is practising as a veterinary surgeon. It is quite idle to present any argument of the kind. This man is, in my judgment, entitled to call himself a veterinary chemist in that sense, and he is also entitled to publish this book. With reference to the case that has been cited about the shoeing-smith, the only observation I shall make on the subject is that it is a different case.'

Mr. Justice Lawrance concurred, and the appeal was dismissed.

THE CONTAGIOUS DISEASES (ANIMALS) ACTS

THE Statutes and Orders of Council relating to the contagious diseases of animals are very voluminous, and can only be briefly alluded to here. It may be mentioned that the Acts and Orders, with a very complete alphabetical exposition of the duties arising under them, are published officially in a thick volume under the title of 'Handbook for England, Wales, and Scotland of the Laws and Regulations relating to Contagious and Infectious Diseases among Animals.' This work is published by H.M. Stationery Office at 2*s*., and may be obtained through any bookseller.

The Acts apply to the whole of the United Kingdom.

The Acts and Orders formerly administered by the Agricultural Department of the Privy Council of Great Britain are now under the charge of the Board of Agriculture and Fisheries (created in 1889 by the Board of Agriculture Act, 52 & 53 Vict. c. 30).

The Statutes comprise the Contagious Diseases (Animals) Acts of 1878, 1884, 1886, and 1903; the Contagious Diseases (Animals) Act, Transfer of Parts of Districts Act, 1884; and the Pleuro-pneumonia Act of 1890. Powers are given in the Acts to the Privy Council (now to the Board of Agriculture) to make and revoke orders in reference to other diseases than those mentioned in the Statutes themselves, and in reference to the importation of animals from foreign countries and the removal of animals in and from special districts. The diseases which are now legislated for under the Acts and Orders are the following:

Cattle Plague, also known as rinderpest.

Pleuro-pneumonia—that is to say, contagious pleuro-pneumonia of cattle.

Foot and Mouth Disease.

Sheep Pox.

Sheep Scab.

Glanders.

Farcy.

Swine Fever—that is to say, the disease known as typhoid fever of swine, soldier, purples, red disease, hog cholera, or swine plague.

Anthrax—that is to say, the disease known as anthrax, splenic fever, or splenic apoplexy of animals (*i.e.*, cattle, sheep, and goats, and all other ruminating animals, and swine).

Rabies.

Sarcoptic mange of horses, asses, and mules. [This applies only to the Shetland Isles.]

The Acts are administered in Ireland by the Lord-Lieutenant and Privy Council of Ireland.

Local authorities are required to appoint inspectors under the Acts, and the Board of Agriculture also provides its own inspectors. Owners or persons in charge of animals affected with any of the diseases named above are required to give notice to a constable, who informs the inspector. The latter gives notice to the Board of Agriculture, and also serves certain notices on the owners or occupiers of the place where the disease occurs, and for a mile around. The Board of Agriculture can accept the notice from the local inspector, or can satisfy itself further, and then can make orders for slaughter and for compensation within certain limits; for prohibiting and regulating the movements of animals in the district; for disinfection, etc. The owner of animals not only must give notice when he knows them to be affected with any of the diseases named above, but may give notice when he only suspects the existence of such a disease; and it then becomes the duty of the inspector to ascertain for himself what steps are necessary. The regulations enforced vary in different diseases, but generally it may be said that treatment is forbidden and slaughter is insisted upon in all cases.

Sheep-scab Order of 1905 was issued on January 27, 1905. It relates to the notification of the disease, duty of the local inspectors, and all that has to be done by owners and local authorities to stamp out the disease. The inspector of the local authority is required to cause all sheep detained on account of scab to be thoroughly dipped in an efficient sheep-dip—*i.e.*, 'a sheep-dip approved by the Board for sheep-scab.' Dips prepared according to the subjoined formulæ are by the Order deemed to be approved by the Board for sheep-scab. Inspectors are empowered to take samples of sheep-dip used for scab, and the person who dips the sheep is required to give particulars as to its name or composition. It is further provided that—

> If any sheep-dip not prepared in accordance with any of the said prescriptions, or otherwise approved by the Board for sheep-scab, is falsely marked with a statement or indication that it has been so prepared or approved, any person who shall have so marked the sheep-dip or caused the same to be so marked, or who shall sell or use the sheep-dip knowing the same to have been so falsely marked, shall be deemed guilty of an offence against the Act of 1894.

The following are the formulæ included in the Order as those which the Board have approved, the quantities being for 100 gallons of bath:

1. LIME AND SULPHUR.

Mix 25 lbs. of flowers of sulphur with 12½ lbs. of good quicklime. Triturate the mixture with water until a smooth cream without lumps is obtained. Transfer this to a boiler capable of boiling 20 gallons, bring the volume of the cream to 20 gallons by the addition of water; boil and stir during half an hour. The liquid should now be of a dark-red colour; if yellowish, continue the boiling until the dark-red colour is obtained, keeping the volume at 20 gallons. After the liquid has cooled decant it from any small quantity of insoluble residue, and make up the volume to 100 gallons with water.

2. CARBOLIC ACID AND SOFT SOAP.

Dissolve 5 lbs. of good soft soap, with gentle warming, in 3 quarts of liquid carbolic acid (containing not less than 97 per cent. of real tar acid). Mix the liquid with enough water to make 100 gallons.

3. Tobacco and Sulphur.

Steep 35 lbs. of finely ground tobacco (offal tobacco) in 21 gallons of water for four days. Strain off the liquid and remove the last portions of the extract by pressing the residual tobacco. Mix the whole extract, and to it add 10 lbs. of flowers of sulphur. Stir the mixture well to secure an even admixture, and make up the total bulk to 100 gallons with water.

It is required that the period of immersion in these dips should not be less than half a minute.

Copies of the Order can be obtained, post free, on application to the Secretary, Board of Agriculture and Fisheries, 4 Whitehall Place, London, S.W., from whom also can be obtained free any of the following

Principal Leaflets dealing with Farm Animals and Poultry.

No.

13. Acorn Poisoning
21. Warble Flies.
28. Anthrax.
29. Swine Fever.
57. External Parasites of Poultry.
58. Internal Parasites of Poultry.
61. Sheep-scab.
67. Favus in Poultry.
78. Liver Disease of Poultry.
81. A Substitute for Dishorning.
83. Preservation of Eggs.
89. Fluke, or Liver Rot in Sheep.
95. Ringworm in Calves.
96. Parturient Apoplexy.
100. Pig Breeding and Feeding.

No.

101. Prevention of White Scour in Calves.
102. Quarter Ill, Quarter Evil, or Black Leg.
108. Contagious Abortion in Cattle.
114. Feeding of Poultry.
118. Sheep-nostril Fly.
119. Sturdy or Gid in Sheep.
126. Sheep-maggot Fly.
129. Winter Egg-production.
130. Navel-ill of Lambs.
135. Mange in Cattle.
142. Calf-rearing.
145. Sheep-dipping.
154. Foot-rot in Sheep.
176. Poultry-fattening.

The leaflets are also issued in sections (1*d.* each), viz. (1) Acts of Parliament, etc. ; (2) Farm Animals, etc.; (3) Poultry and Bees ; (4) Crops ; (5) Wild Birds, etc. ; (6 and 7) Insect Pests ; (8) Injurious Fungi ; Bound volumes 6*d.* each. Acts and Regulations, 2*s.* 6*d.*

SALE OF HORSES

The law affecting the sale of horses (so far as it differs from the law concerning the sale of goods generally) has been digested as follows by Judge Chalmers from the statutes 'Act against the Buying of Stolen Horses' (2 & 3 Phil. & Mar. c. 7) and 'Act to avoid Horse-stealing' (31 Eliz. c. 12):—

1. The sale of any horse, whether in market overt or otherwise, shall be void as against the true owner thereof, unless such sale be made in accordance with the following rules.

2. When a stolen horse has been sold in market overt, and in accordance with these rules, the true owner may recover the same, if he make claim thereto within six months of the theft, on tendering to any person who may have bought it in good faith the price which he gave for the same.

3. The market authority in every horse fair or market shall cause a special open place to be marked out for the sale of horses.

4. There shall be a toll-keeper appointed for such place, who shall take tolls and keep the place from ten before noon until sunset of each market day, and no tolls shall be taken except between the aforesaid hours.

5. No horse shall be sold or otherwise transferred, unless it has been exposed in the place of sale for one hour at least during the hours aforesaid.

6. When the toll is taken the parties to the sale or transfer shall be present before the toll-keeper, and the toll-keeper shall enter in a book, to be kept for that purpose, the names, surnames, and address of the parties, together with the colour and one special mark at least of the horse so sold or transferred.

7. The toll-keeper shall not enter the sale or transfer in his book unless he will take upon himself perfect knowledge of the name, surname, and address of the person selling or transferring the horse, or unless the person so selling or transferring the horse is vouched for by a sufficient and credible person known to the toll-keeper, who is personally acquainted with him, and knows his name, surname, description, and address. In the latter case the toll-keeper shall enter in his book the name, address, and description of the seller or transferrer, and of the person who vouches for him, and also the price, if any, given for the horse.

8. A note of the entry in the toll-keeper's book shall be given to the buyer, who shall pay the sum of twopence therefor.

9. Not later than the day after the conclusion of the fair or market the toll-keeper shall deliver his book to the market authority, who shall cause a note to be made of the true number of all horses sold at the said fair or market.

10. In these rules the term 'horse' includes mare, gelding, colt, and filly; and 'toll-keeper' includes deputy toll-keeper, or book-keeper, when by usage no toll is taken.

11. When according to the usage of the market no toll is taken, the book-keeper shall be entitled to one penny for each sale or transfer entered in his book.

THE VETERINARY CURRICULUM

ALL persons who practise as 'veterinary surgeons' must be registered as such by the Royal College of Veterinary Surgeons; and the only course open for persons entering the profession now is to study at one of the veterinary colleges and pass the examinations of the Royal College, which is not itself an educating body. The shortest period of study necessary to obtain the diploma is four sessional years, which implies that a student must attend the classes, etc., of one or more of the recognised colleges during a session of not less than thirty weeks in each of the four years.

A student, before presenting himself for the first professional examination, is required to pass a preliminary examination recognised by the General Medical Council.

There are four professional examinations, one at the end of each sessional year, conducted by the Examining Board of the Royal College of Veterinary Surgeons. Examinations are held three times during the year, one in March, April, or May, one in December or January, and a third in July. The fee for each is 5*l.*, and for re-examination after rejection 3*l.* 3*s.* In addition, on passing the final examination a registration fee of 1*l.* is demanded.

The subjects of the professional examinations, which are both *written and oral*, are as follows:

First.—Examination A.

1. Anatomy of domesticated animals (*Bones*, *Ligaments*, *Joints*).
2. Chemistry and Elementary Physics.
3. Biology (Elementary Zoology and Botany).

Second.—Examination B.

1. Anatomy of domesticated animals.
2. Histology and Physiology.
3. (*Oral only.*) Stable management and manipulation of domesticated animals; principles of shoeing.

Third.—Examination C.

1. Morbid Anatomy, Pathology, and Bacteriology.
2. Materia Medica, Practical Pharmacy, Therapeutics, and Toxicology.
3. Veterinary Hygiene and Dietetics.

Fourth.—Examination D.

1. Principles and Practice of Veterinary Medicine. Meat Inspection. Clinical Medicine, Surgery, and Obstetrics.
2. Principles and Practice of Veterinary Surgery and Obstetrics.

All letters in regard to the examinations should be addressed to the Secretary, R.C.V.S., 10 Red Lion Square, London, W.C.

METHYLATED VETERINARY PREPARATIONS

METHYLATED spirit is supplied in two forms : (1) mineralised methylated spirit and (2) industrial methylated spirit. The former contains 10 per cent. of wood naphtha and 0·3 per cent. of mineral naphtha, while the industrial spirit is denatured with 5 per cent. of wood naphtha, and is specially intended for manufacturing purposes. The Commissioners of Custom and Excise allow mineralised methylated spirit to be used in the manufacture of horse and cattle medicines so compounded as not to be capable of being used internally as medicines by human beings. Persons who are licensed to retail methylated spirit must obtain permission to use the spirit for such purposes from the Commissioners of Customs and Excise, Lower Thames Street, London, E.C., either direct or through the local Supervisor of Excise. Industrial methylated spirit is also permitted to be used, but in each case a special application must be made, and the formula or composition stated, and the spirit may not be used in the manufacture of such preparations until the special permission of the Commissioners has been obtained, and such security given (usually by bond) as they may require for the proper use of the methylated spirit. Such preparations as mustard liniment, iodine liniment, tincture of arnica, tincture of benzoin, etc., which contain drugs commonly prescribed for internal use by human beings, are not allowed to be prepared with methylated spirit ; and cattle medicines, if reasonably capable of being used for human beings, fall under the same category. Permission would be denied with regard to tincture of aloes or of camphor, but it is usually granted in the case of blisters, Leeming's Essence, strong opium draughts, corrosive sublimate applications, etc.

ADMINISTRATION OF POISONOUS DRUGS TO HORSES ACT OF 1876

THIS Act renders any person liable, on conviction, to a penalty of 5*l*., or one month's imprisonment, for administering or causing to be administered to or taken by any horse, cattle, or domestic animal any poisonous or injurious drug or substance. Applies to England and Wales only.

VETERINARY OUTFIT

THE following list of the medicinal and surgical requisites supplied by the British Government to veterinary surgeons attached to ships used to convey horses to South Africa during the Boer war is given here so as to indicate what a veterinary medicine and surgical chest should be :

Medicines	Quantity	How Packed
Acid. boric.	6 oz.	Tin canister
Acid. carbolicum liquid.	1 lb. 4 oz.	Screw-capped tin canister
Aloes barbadensis	6 oz.	Tin canister
Aloetic balls, 4-dr.	No. 12	In tin canister
Camphora	4 oz.	Tin canister
Carb. ammonia balls, 2-dr.	No. 20	In tin canister
Cupri sulphas	8 oz.	Tin canister
Extract. belladonnæ	6 oz.	Tin canister
Ferri sulphas	4 oz.	S.G.S. bottle (W.M.)
Gentianæ pulv.	5 oz.	Tin canister
Hydrargyri iodid. rubr.	2 oz.	G.S. bottle
Hydrargyri subchlorid.	3 oz.	G.S. bottle
Iodoform.	8 oz.	6 oz. in S.G.S. bottle (W.M.) and 2 oz. in dredger
Liquor ammoniæ fort.	3 oz.	Square G.S. bottle (N.M.)
Mustard, compressed	8 oz.	In 2 packets
Oleum lini	2 lbs. 8 oz.	In 2 screw-cap. tin canister
Oleum terebinth.	1 lb. 4 oz.	Screw-capped tin canister
Opii pulvis	5 lbs. 8 oz.	Tin canister
Paraffin. molle	14 oz.	Tin canister
Phenyle	1 lb. 4 oz.	Screw-capped tin canister
Plumbi acetas	5 oz.	Tin canister
Potassii nitras	1 lb. 3 oz.	Tin canister
Sapo communis	8 oz.	Paper packet
Sapo mollis	1 lb. 2 oz.	Tin canister
Soloids of mercuric chloride	12 oz.	In 2 S.G.S. bottles (W.M.)
Spirit. ætheris nitrosi	1 lb. 8 oz.	In 2 S.G.S. bottles (12 oz.)
Spirit. ammon. aromat.	12 oz.	S.G.S. bottle
Tr. cardam. comp.	12 oz.	S.G.S. bottle
Zinci sulphas	4 oz.	Tin canister
Zingib. pulv.	5 lbs. 8 oz.	Tin canister

SURGICAL DRESSINGS	Quantity	
Bandages, handloom	12	
Bandages, cloth, 2 yards by 4 inches	4	
Box, tin, with candle	1	
Candles, sperm, carriage size	4	
Gauze, antiseptic	2 yards	
Ligature, flax	½ oz.	
Ligature, silk	¼ oz.	
Lint, carbolised	8 oz.	In 2 packets
Pins, common, paper	1 packet	
Pins, safety	1 doz.	In packet
Tape, broad	1 piece	
Tow, carbolised	1 lb.	In 4 packets
Twine (pack thread)	2 oz.	One ball
Wool, absorbent	4 oz.	In 2 packets
Wool, absorbent	2 oz.	In 1 packet
Wool, absorbent	10 oz.	In 10 packets
Wool, boric	10 oz.	In 10 packets
Wool, boric	4 oz.	In 2 packets
Wool, carbolised	4 oz.	In 2 packets
Wool, carbolised	12 oz.	In 12 packets

NECESSARIES	No.
Canisters, tin, round, set of three (the one with the cover contains the measure-glass)	1
Dredger, complete with iodoform-bottle (the bottle in dredger contains 2 oz. iodoform)	1
Horn, drenching	1
Measure-glass, 2 oz. (in tin canister)	1
Measure-tin	1
Pestle and mortar, Wedgwood, 8 oz.	1
Powder-dredger	1
Scales and weights, gr. and dr., portable	1
Slab, copper, plated, 6 inches by 5 inches	1
Spatula, bolus, 8 inches	1

INSTRUMENTS	No.
Balling-iron, small, screw pattern	1
Bistoury, probe-pointed	1
Bullet-forceps	1
Case containing three scalpels, Symes' knife, and dissecting-forceps	1
Caustic-cases	2

INSTRUMENTS—(*cont.*)	No.
Exploring-needle	1
Forceps, pin-cutting	1
Funnel, enema	1
Hone	1
Probes, metal, 11 and 6 inches	1
Probe, whalebone, 11 inches	1
Pull-off case, containing three needles, silk, and tape	1
Scissors, dressing, curved	1
Scissors, trimming, curved	1
Seton-needle	1
Syringe, dressing, brass, 2-oz.	1
Syringe, dressing, spare nozzle for	1
Syringe, hypodermic vety. ; with tabloids	1
Thermometer, clinical, 4-inch (in metal case)	1
Thermometer, clinical, 6-inch (in metal case)	1
Tooth-rasp	1
Tracheotomy-tube	1
Trocar and cannula	1

SWINE FEVER.

THE Committee on Swine Fever appointed by the Board of Agriculture and Fisheries presented their final report to the President of the Board while this edition was in the press (September, 1915). In it they state that they have come to the conclusion that the attempt to extirpate the disease by general slaughter should be abandoned for the present, and that the immediate object of future policy should be the reduction of mortality and the control of the spread of the disease. They make the following recommendations :

> That the use of protective serum without avoidable delay in infected herds should be encouraged by every possible means, and in particular by facilitating the supply of serum
>
> That the production of immune herds by simultaneous administration of serum and virus should be undertaken where pig-owners so desire on premises selected as suitable and under careful supervision and restrictions.
>
> That the isolation of infected premises should be maintained by restrictive regulations, but that such restrictions should allow of the introduction to infected premises of pigs to be treated immediately with serum.
>
> That careful consideration should be given in the light of further experience to the extent to which existing general restrictions on movement may be relaxed as the result of new measures.
>
> That the lapse of a short period of time [a fortnight is suggested] may be relied upon for disinfection of premises, and should be regarded as preferable to chemical disinfection in the case of large quantities of manure and of premises not readily capable of being disinfected by artificial means.

The members of the Committee are strongly impressed by the possibility of artificial vaccination as a method of combating swine fever, and recommend that investigation on this matter should be continued. They find that rats are not pathological carriers of the disease, nor is it propagated by external parasites, and, while infection may be carried locally by persons, vehicles, or animals in contact with infected pigs, wide dissemination is due to the movement of pigs.

HINTS ON ANIMAL NURSING.

ALL pharmacists who undertake the dispensing of veterinary medicines should be able to advise their customers and understand what is required to promote the comfort of animals, both in health and sickness. On such questions as ventilation, nursing, warmth, clothing, poulticing, bandaging, and dressing, a chemist may often give useful advice. One who understands the signs of health can very readily detect any deviation from the ordinary. Thus an animal in normal health eats up all its food, drinks freely, and makes frequent expulsions of dung and water, and in cattle rumination proceeds as usual. In animals enjoying perfect health the skin should be soft and smooth. If otherwise ‘hidebound’ there is something wrong which requires attention. It may be mentioned here that ‘hidebound’ is not a disease any more than a cough, but a symptom which accompanies many diseases and is often very pronounced in cattle. When an animal is seen to be ill the first consideration, after relieving the pain when necessary, should be to make the animal comfortable on all occasions. If one is handy put the animal in a loose-box, see that a good bed is provided, and that ventilation is good. On no consideration increase the temperature of the animal by keeping pure air out, but put on extra clothing and be careful to avoid draughts. The temperature should be taken—it is normally 101°–102°—as this is a great help in diagnosis. The pulse also should be taken, and a general observation made of all movements, respirations, etc.

Poultices.- When poultices have to be applied, such as in founder, it is of great importance that they be of a genial warmth and kept so. Bran is the most common basis used for making poultices for animals; linseed, oatmeal, boiled turnips, etc., are also employed. When a discharge such as pus or any kind of matter impregnates the poultice, it can be kept sweet and fresh and free from smell by adding some charcoal to it, this being of greater value than adding disinfectants. When a poultice is on a part without a discharge it is not necessary to change the poultice oftener than every twenty-four hours or so; it can be kept warm by pouring warm water over it. Water should always be within easy reach of the animal—unless when purgative medicine has been given—by eaving a pailful beside it, which should be renewed twice daily. An easy way of giving medicine, such as fever powders, is by mixing them in the drinking-water. Too much light should never be thrown on the animal's face during severe sickness, but when convalescent more can be admitted, as it is more cheerful and brighter for the animal.

Quietness and Cleanliness.—Keep the animal perfectly quiet and peaceful, and if possible let it be attended by only one person or two at the most, one for night and one for day work; and let it be clearly understood that the animal is not to be disturbed by anyone without authority. Noises should not be allowed, as these agitate the animal, causing excitability and lessening progress towards recovery. The horse is the most sensitive animal living in regard to his food and water, therefore special care should be taken to keep the feeding-troughs and water-pails scrupulously clean. The first requisite for a sick horse is pure, fresh air, avoiding draughts (use a loose-box if possible), quietness, liberal covering, and clean bed. The appetite of a sick horse is very often capricious, and during the height of a fever it is often entirely lost. It is of no use to try to force the animal to eat, but medicine in not too large doses should be given as the disease requires, and the food should be in small quantities, often and varied.

Feeding a Sick Animal.—In feeding sick or convalescent cattle food should be given in very small quantities at a time, and when accepted repeated at short intervals. It is often necessary to tempt the animal to eat by giving it dainty morsels in small quantities. Mashes are usually given; they may be made of bran alone or bran and boiled barley or boiled linseed. A handful of corn is added, as it is an incentive to eating. Salt also given in the mash has the same effect, as well as some spices such as fennel and aniseed. When the appetite is sparse it can be coaxed by trying any of the following, which invariably satisfy at least once and can be succeeded by any of the others: green foods, grass, cabbages, turnips, potatoes, carrots (whole or grated), sheaf of corn or wheat, or barley for a cow, linseed or hay tea, and milk and eggs.

Clothing.—From the beginning to the end of the time of indisposition the animal's clothing should be removed twice daily and the skin thoroughly groomed as far as practicable. Any discharge from the eyes or nostrils should be sponged off, and should it be required the part rubbed with lard or vaseline to prevent excoriation. The bandages must also be renewed and the legs rubbed with wisps of straw. When the animal is first taken out for exercise, extra clothing should be employed, the amount to be gradually reduced according to climate and weather.

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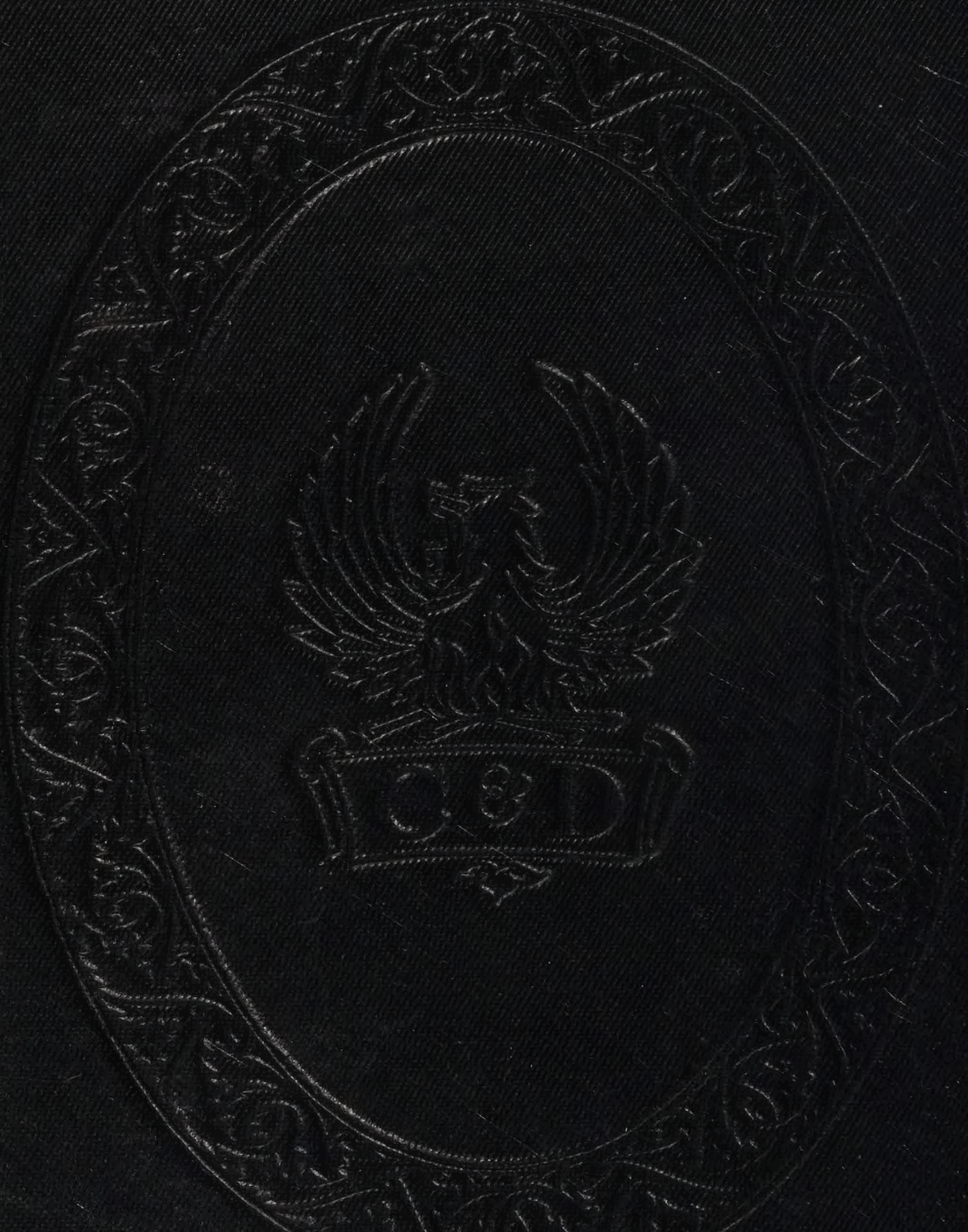
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